B) \$3,109

C) \$2,230

Explanation

Given the exercise rate of 2.00%, the put option has a positive payoff for nodes P^{--} and P^{-+}.

The payoff at node P^{--} can be calculated as:

[Max (0, 0.02 – 0.0128)] × \$ 1,000,000 = \$7,200.

The payoff at node P^{-+} can be calculated as:

[Max (0, 0.02 – 0.019)] × \$ 1,000,000 = \$ 1,000.

Value at node P^{-} = [(0.5 × 7,200) + (0.5 × 1,000)] / (1.0155) = \$4,037

Value at node P^{+} = [(0.5 × 0) + (0.5 × 1,000)] / (1.0231) = \$489

And the value at node P = [(0.5 × 4,037) + (0.5 × 489)] / (1.015) = \$2,230.

(Module 29.5, LOS 29.e)

Question #15 of 112

Question ID: 1686835

Suppose a forward rate agreement (FRA) calls for us to receive the six-month MRR two years from now for a payment of a fixed rate of interest of 6%. Which of the following structures is equivalent to this long FRA? A long:

A) call on MRR with a strike rate of 6% and eighteen months to expiration.

B) call and a short put on MRR with a strike rate of 6% and two years to expiration.

C) put and a short call on MRR with a strike rate of 6% and two years to expiration.

Explanation

A long FRA is replicated by a long IR call and short IR put with expiration corresponding to the FRA settlement date.

(Module 29.6, LOS 29.j)

Question #16 of 112

Question ID: 1686844

Which of the following statements concerning vega is *most* accurate? Vega is greatest when an option is:

A) far in the money.

B) far out of the money.

C) at the money.

Explanation

When the option is at the money, changes in volatility will have the greatest effect on the option value.

(Module 29.7, LOS 29.k)

Question #17 of 112

Question ID: 1686772

DTK Inc stock (current price $55) has 1-year call options with an exercise price of $55 trading at $4.92. The stock can increase by 20% or decrease by 15% over the next year and the risk-free rate is 5%. Arbitrage profits are *most likely*:

A) possible by purchasing 57 shares and writing 100 calls.

B) not possible.

C) possible by purchasing 100 calls and short selling 57 shares.

Explanation

S^+ = 55(1.20) = 66; S- = 55 (0.85) = 46.75. C^+ = 66 – 55 = 11, C^- = 0.

H = (11 – 0) / (66 – 46.75) = 0.5714

$$C_0 = hS_0 + \frac{(-hS^+ + C^+)}{(1+R_f)}$$

= (0.571×55) + [((-0.571×66) + 11) / 1.05] = 5.99

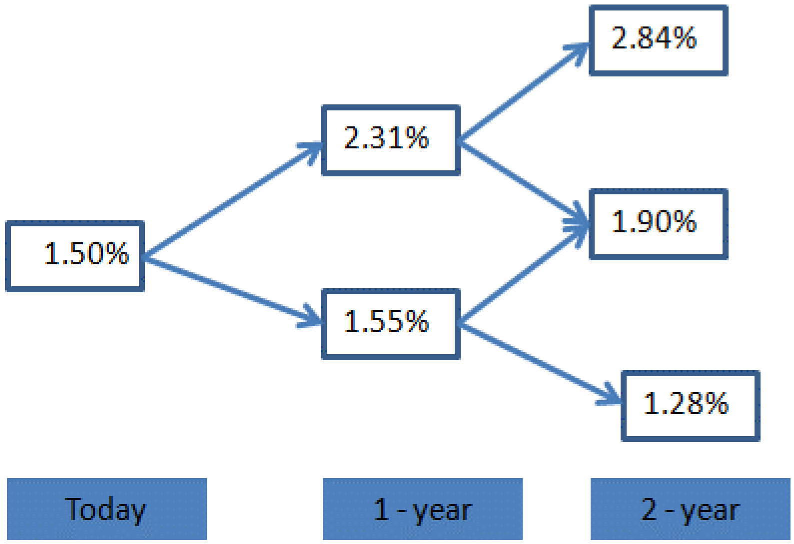
Since the call price of $4.92 < $5.99, an arbitrage profit can be earned by buying calls and short selling 0.571 shares per call bought.

(Module 29.4, LOS 29.c)

Question #18 of 112

Question ID: 1686775

Given the following interest rate tree:



The value of a 2-period European call option with strike rate of 2% and notional principal of $1 million is closest to:

A) $4,122

B) $3,549

C) $2,022

Explanation

Given the exercise rate of 2.00%, the call option has a positive payoff for node C^{++} only.

The payoff at node C^{++} can be calculated as:

[Max (0, 0.0284 – 0.02)] × $ 1,000,000 = $ 8,400.

Value at node C^{+} = [(0.5 × 8,400) + (0.5 × 0)] / (1.0231) = $4,105

Value at node C^{-} = 0

And the value at node C = [(0.5 × 4,105) + (0.5 × 0)] / (1.015) = $2,022

(Module 29.5, LOS 29.e)

Question #19 of 112

Question ID: 1686837

Which of the following option sensitivities measures the change in the price of the option with respect to a decrease in the time to expiration?

A) Delta. ✗

B) Gamma. ✗

C) Theta. ✓

Explanation

Theta describes the change in option price in response to the passage of time. Since option holders would prefer that value not decay too quickly, an option with a low theta value is desirable.

(Module 29.7, LOS 29.k)

Question #20 of 112

Question ID: 1686875

If we use four of the inputs into the Black-Scholes-Merton option-pricing model and solve for the asset price volatility that will make the model price equal to the market price of the option, we have found the:

A) implied volatility. ✓

B) historical volatility. ✗

C) option volatility. ✗

Explanation

The question describes the process for finding the expected volatility implied by the market price of the option.

(Module 29.7, LOS 29.n)

Question #21 - 24 of 112

Question ID: 1686854

Which of the following *most* accurately describes when the call option delta reaches its minimum bound? The call option reaches its minimum bound when call option is:

A) the option's delta has no minimum bound.

B) far out of the money.

C) at the money.

Explanation

When a call option is far out of the money its value is insensitive to changes in value of the underlying. This is because the chances that it is going to end up in the money at expiration are very small.

(Module 29.7, LOS 29.l)

Question #22 - 24 of 112

Question ID: 1686855

If the portfolio has 10,000 shares of the underlying stock and he wants to completely hedge the price risk using options, what kind of options should Franklin buy?

A) Call and put options.

B) Put options.

C) Call options.

Explanation

Buying put options will allow Franklin to completely hedge the stock price risk.

(Module 29.7, LOS 29.l)

Question #23 - 24 of 112

Question ID: 1686856

Compute the number of shares of stock necessary to create a delta neutral portfolio consisting of 100 long put options in Exhibit 2 and the stock.

A) 32.64.

B) 67.36.

C) −32.64.

Explanation

This is simply −100 times the put option delta. Since each share has a delta of 1, we only need 32.64 shares (long) to create a delta neutral portfolio.

(Module 29.7, LOS 29.l)

Question #24 - 24 of 112

Question ID: 1686857

Compute the number of shares of stock necessary to create a delta neutral portfolio consisting of 100 long call options in Exhibit 2 and the stock.

A) 67.36. ✗

B) −32.64. ✗

C) −67.36. ✓

Explanation

This is simply −100 times the call option delta. Since each share has a delta of 1, we only need −67.36 (short) shares to create a delta neutral portfolio.

(Module 29.7, LOS 29.l)

Question #25 - 28 of 112

Question ID: 1686806

Which of the following is *closest* to the no-arbitrage price of the 5-month T-Bond futures contract?

A) $867.20. ✓

B) $877.47. ✗

C) $976.02. ✗

Explanation

The no-arbitrage price for T-Bond futures is given by the formula:

QFP = {(full price) × $(1 + R_f)^T$ – AI_T – FVC)(1 / CF)

The full price of the bond = clean price + accrued interest. Since the bond pays semi-annual coupons, and four months have passed since the last coupon, there are two months until the next coupon.

Accrued interest (AI) = (days since last coupon / days between coupons) × $ semiannual coupon. In this question we have not been told days but instead have months.

AI_T in the formulae represents the accrued interest at the maturity of the futures contract. Given the last coupon was 4 months ago the next coupon of $23 will be in two months' time. At the maturity of the futures contract in five months we will be 3 months through the coupon period, hence:

AI_T = (3 months / 6 months) × $23 = $11.5

The next coupon will be in two months' time (four months' ago, plus six months) and will equal $23. FVC in the above formula is this coupon compounded up to the futures maturity, three months later, so FVC = $23 × 1.02993 / 12 = $23.17.

Thus, QFP = [($1,002.33 × 1.02995 / 12) – $11.5 – $23.17] / 1.13 = $867.20

(Module 28.3, LOS 28.d)

Question #26 - 28 of 112

Question ID: 1686807

Comment 1 is *best* described as:

A) correct. ✔

B) incorrect as long an interest rate floor should be short an interest rate floor. ✘

C) incorrect as long an interest rate floor should be long an interest rate cap. ✘

Explanation

For a long call option on a bond, when interest rates decrease, bond prices rise hence call value increases. Similarly, for an interest rate put, when interest rate decreases, the long put value increases.

(Module 29.6, LOS 29.j)

Question #27 - 28 of 112

Question ID: 1686808

Comment 2 is *best* described as:

A) correct.

B) incorrect as it should be buying an interest rate floor and selling an interest rate cap.

C) incorrect as it should be the floor that sets the maximum interest rate payable by the borrower.

Explanation

Interest rate cap pays when the reference rate exceeds the strike rate. As such, the borrower can use the payment from the interest rate cap to offset the higher interest payment on the floating rate loan. Hence the strike rate on the cap is the maximum interest rate that the borrower has to pay. By selling the floor, the premium received on the floor will help to offset some of the premium paid on the cap. In addition, the collar also hedged the interest rate exposure of the loan through the strike rate of the cap and floor.

(Module 29.6, LOS 29.j)

Question #28 - 28 of 112

Question ID: 1686809

Comment 3 can be *best* described as:

A) correct.

B) incorrect as it is describing a receiver swaption, not a payer swaption.

C) incorrect as a payer swaption is more valuable if an equivalent swap at the market rate is lower than the strike rate.

Explanation

Comment 3 is a correct description of a payer swaption.

(Module 29.6, LOS 29.j)

Question #29 of 112

Question ID: 1686842

Which of the following is the *best* approximation of the gamma of an option if its delta is equal to 0.6 when the price of the underlying security is 100 and 0.7 when the price of the underlying security is 110?

A) 0.01.

B) 1.00.

C) 0.10.

Explanation

The gamma of an option is computed as follows:

Gamma = change in delta/change in the price of the underlying = (0.7 – 0.6)/(110 – 100) = 0.01

(Module 29.7, LOS 29.k)

Question #30 of 112

Question ID: 1686773

Combining a short position in a stock with a long position in a call option on the stock will produce a payoff pattern equivalent to a:

A) risk-free security.

B) short position in a put option on the stock.

C) long position in a put option on the stock.

Explanation

The combined payoff pattern of a short position in a stock and a long call option on the stock is the same as the payoff pattern of a long put option on the stock.

(Module 29.2, LOS 29.c)

Question #31 - 34 of 112

Question ID: 1686849

Which of the following *best* explains a delta-neutral portfolio? A delta-neutral portfolio is perfectly hedged against:

A) small price changes in the underlying asset.

B) small price decreases in the underlying asset.

C) all price changes in the underlying asset.

Explanation

A delta-neutral portfolio is perfectly hedged against small price changes in the underlying asset. This is true both for price increases and decreases. That is, the portfolio value will not change significantly if the asset price changes by a small amount. However, large changes in the underlying will cause the hedge to become imperfect. This means that overall portfolio value can change by a significant amount if the price change in the underlying asset is large.

(Module 29.7, LOS 29.l)

Question #32 - 34 of 112

Question ID: 1686850

After discussing the concept of a delta-neutral portfolio, Washington determines that he needs to further explain the concept of delta. Washington draws the payoff diagram for an option as a function of the underlying stock price. Using this diagram, how is delta interpreted? Delta is the:

A) slope in the option price diagram.

B) curvature of the option price graph.

C) level in the option price diagram.

Explanation

Delta is the change in the option price for a given instantaneous change in the stock price. The change is equal to the slope of the option price diagram.

(Module 29.7, LOS 29.l)

Question #33 - 34 of 112

Question ID: 1686851

Washington is trying to determine the value of a call option. When the slope of the at expiration curve is close to zero, the call option is:

A) in-the-money.

B) at-the-money.

C) out-of-the-money. ✓

Explanation

When a call option is deep out-of-the-money, the slope of the at expiration curve is close to zero, which means the delta will be close to zero.

(Module 29.7, LOS 29.l)

Question #34 - 34 of 112

Question ID: 1686852

BIC owns 51,750 shares of Smith & Oates. The shares are currently priced at $69. A call option on Smith & Oates with a strike price of $70 is selling at $3.50, and has a delta of 0.69 What is the number of call options necessary to create a delta-neutral hedge?

A) 75,000. ✓

B) 0. ✗

C) 14,785. ✗

Explanation

The number of call options necessary to delta hedge is = 51,750 / 0.69 = 75,000 options or 750 option contracts, each covering 100 shares. Since these are call options, the options should be sold short.

(Module 29.7, LOS 29.l)

Question #35 - 38 of 112

Question ID: 1686761

Barlow notices that the stock in Exhibit 1 does not pay dividends. If the stock begins to pay a dividend, how will the price of a call option on that stock be affected? The price of the call option:

A) may either increase or decrease. ✗

B) will decrease. ✓

C) will increase. ✗

Explanation

The call option value will decrease since the payment of dividends reduces the value of the underlying, and the value of a call is positively related to the value of the underlying.

(Module 29.1, LOS 29.a)

Question #36 - 38 of 112

Question ID: 1686762

Barlow calculated the value of an American call option on the stock shown in Exhibit 2. Which of the following is *closest* to the value of this call option?

A) $15.12. ✗

B) $15.41. ✗

C) $14.84. ✓

Explanation

The value of the American-style call option is the same as the value of the equivalent European-style call option. Since the underlying stock does not pay a dividend, it is never optimal to exercise the American option early. Hence the early-exercise option embedded in the American-style call has no value in this case. This makes the American option worth exactly the same as the European option.

(Module 29.1, LOS 29.a)

Question #37 - 38 of 112

Question ID: 1686763

Using the information in Exhibit 2, Barlow computes the value of a European put option. Which of the following is *closest* to the value of this option?

A) $1.41. ✓

B) $4.84. ✗

C) $1.97. ✗

Explanation

Using the information in Exhibit 2, this value can be determined from put-call parity as follows:

$$\text{Put} = \text{Call} + Xe^{-rt} - S$$

So we have Put = $14.8445 + 100.00e^{(-7.00\% \times 0.5)}$ − $110.00 = $1.4050

(Module 29.1, LOS 29.a)

Question #38 - 38 of 112

Question ID: 1686764

Barlow notices that the stock in Exhibit 2 does not pay dividends. If the stock starts to pay a dividend, how will the price of a put option on that stock be affected?

A) Increase or decrease. ✗

B) Increase. ✓

C) Decrease. ✗

Explanation

The put option value will increase since the payment of dividends reduces the value of the underlying, and the value of a put is negatively related to the value of the underlying.

(Module 29.1, LOS 29.a)

Question #39 - 42 of 112

Question ID: 1686824

Bower is a bit puzzled about how to use caps and floors. He wonders how he could benefit both from increasing and decreasing interest rates. Which of the following trades would *most likely* profit from this interest rate scenario?

A) Buy at the money cap and at the money floor. ✓

B) Sell at the money cap and at the money floor. ✗

C) Buy at the money cap and sell at the money floor. ✗

Explanation

This is a straddle on interest rates. The cap provides a positive payoff when interest rates rise and the floor provides a positive payoff when interest rates fall.

(Module 29.6, LOS 29.j)

Question #40 - 42 of 112

Question ID: 1686825

Bower has studied swaps extensively. However, he is not sure which of the following is the swap fixed rate for a one-year interest rate swap based on 90-day LIBOR with quarterly payments. Using the information in Table 1 and the formula below, what is the *most* appropriate swap fixed rate for this swap?

$$C = \frac{1 - Z_4}{Z_1 + Z_2 + Z_3 + Z_4}$$

where

$$Z_n = \frac{1}{1 + R_N} \text{price of n} - \text{zero} - \text{coupon bond per \$ of principal}$$

A) 6.01%.

B) 5.75%.

C) 5.65%.

Explanation

The swap fixed rate is computed as follows:

$$Z_{90-\text{day}} = \frac{1}{1+(0.055\times 90/360)}$$

$$= 0.98644$$

$$Z_{180-\text{day}} = \frac{1}{1+(0.05625\times 180/360)}$$

$$= 0.97264$$

$$Z_{270-\text{day}} = \frac{1}{1+(0.57499\times 270/360)}$$

$$= 0.95866$$

$$Z_{360-\text{day}} = \frac{1}{1+(0.058749\times 360/360)}$$

$$= 0.94451$$

$$\text{The quarterly fixed rate on the swap} = \frac{1-0.94451}{0.98644+0.97264+0.95866+0.94451}$$

$$= 0.05549/3.86225 = 0.01437 = 1.437\%$$

The fixed rate on the swap in annual terms is:

1.437% × 360 / 90 = 5.75%

(Module 29.6, LOS 29.f)

Question #41 - 42 of 112

Question ID: 1686826

Bower computes the implied volatility of a one year caplet on the 90-day LIBOR forward rates to be 18.5%. Using the given information what does this mean for the caplet's market price relative to its theoretical price? The caplet's market price is:

A) overvalued.

B) undervalued or overvalued.

C) undervalued.

Explanation

Volatility and option prices are always positively related. Therefore, since the option implied volatility is lower than the estimated volatility, this implies that the caplet is undervalued relative to its theoretical value.

(Module 29.6, LOS 29.f)

Question #42 - 42 of 112

Question ID: 1686827

For this question only, assume Bower expects the currently positively sloped LIBOR curve to shift upward in a parallel manner. Using a plain vanilla interest rate swap, which of the following will allow Bower to best take advantage of his expectations? Purchase a:

A) receive fixed interest rate swap.

B) pay fixed interest rate swap.

C) floating rate bond and enter into a receive fixed swap.

Explanation

Since the interest rates are expected to rise for all maturities, one can benefit from this rise by receiving a floating rate (LIBOR) and borrowing at a fixed rate (i.e. a pay fixed swap).

(Module 29.6, LOS 29.f)

Question #43 of 112

Question ID: 1686767

Consider a stock currently trading at $40. The periodically compounded interest rate is 5%. Suppose that U = 1.25 and D = 0.8. The value of a two-period, at-the-money American-style put option is closest to:

A) $3.35.

B) $2.53.

C) $1.22.

Explanation

Probability of up-move = (1 + 0.05 – 0.80) / (1.25 – 0.80) = 0.56

Probability of down-move = 1 – 0.56 = 0.44

We are given that the option is at-the-money and hence X = S_0 = 40.

Binomial tree is shown

S^+ = 40 x 1.25 = 50

S^- = 40 x 0.80 = 32

S^{++} = 50 x 1.25 = 62.50

S^{+-} = S-+ = 50 x 1.25 x 0.80 = 50

S^{--} = 32 x 0.80 = 25.60

For period 2, the put option is in the money only for the down-down node and the intrinsic value = 40 – 25.60 = 14.40

P^+ = (0 x 0.56 + 0 x 0.44) / 1.05 = 0

P^- = (0 x 0.56 + 14.40 x 0.44) / 1.05 = 6.03

However, since it is an American put, early exercise at t=1 will provide a payoff of $40 - $32 = $8. We use the higher expected value of $8 for P-

P = (0 x 0.56 + 8 x 0.44) / 1.05 = 3.35

(Module 29.1, LOS 29.d)

Question #44 of 112

Question ID: 1686874

When an option's gamma is higher:

A) delta will be higher.

B) a delta hedge will be more effective.

C) a delta hedge will perform more poorly over time.

Explanation

Gamma measures the *rate of change* of delta (a high gamma could mean that delta will be higher or lower) as the asset price changes and, graphically, is the curvature of the option price as a function of the stock price. Delta measures the slope of the function at a point. The greater gamma is (the more delta changes as the asset price changes), the worse a delta hedge will perform over time.

(Module 29.7, LOS 29.m)

Question #45 of 112

Question ID: 1686877

Which of the following *best* describes the implied volatility method for estimated volatility inputs for the Black-Scholes model? Implied volatility is found:

A) by solving the Black-Scholes model for the volatility using market values for the stock price, exercise price, interest rate, time until expiration, and option price. ✓

B) using historical stock price data. ✗

C) using the most current stock price data. ✗

Explanation

Implied volatility is found by "backing out" the volatility estimate using the current option price and all other values in the Black-Scholes model.

(Module 29.7, LOS 29.n)

Question #46 of 112

Question ID: 1686769

Dividends on a stock can be incorporated into the valuation model of an option on the stock by:

A) subtracting the future value of the dividend from the current stock price. ✗

B) adding the present value of the dividend to the current stock price. ✗

C) subtracting the present value of the dividend from the current stock price. ✓

Explanation

The option pricing formulas can be adjusted for dividends by subtracting the present value of the expected dividend(s) from the current asset price.

(Module 29.1, LOS 29.d)

Question #47 - 50 of 112

Question ID: 1686756

Using the information in Exhibit 1, Franklin wants to compute the value of the corresponding European call option. Which of the following is the *closest* to Franklin's answer?

A) \$5.55.

B) \$4.78.

C) \$11.54.

Explanation

This result can be obtained using put-call parity in the following way:

$$\text{Call Value} = \text{Put Value} - Xe^{-rt} + S = \$4.78 - \$100.00e^{(-0.07 \times 1.0)} + 100 = \$11.54$$

The incorrect value of \$4.78 does not discount the strike price in the put-call parity formula.

(Module 29.1, LOS 29.a)

Question #48 - 50 of 112

Question ID: 1686757

Franklin wants to know how the put option in Exhibit 1 behaves when all the parameters are held constant except the delta. Which of the following is the *best* estimate of the change in the put option's price when the underlying equity increases by \$1?

A) −\$3.61.

B) −\$0.37.

C) −\$0.33.

Explanation

The correct value is simply the delta of the put option in Exhibit 2.

The incorrect value −\$3.61 represents the change due to the volatility divided by 10 multiplied by −1.

The incorrect value −\$0.37 calculates the change by dividing the short-term interest rate divided by 100.

(Module 29.1, LOS 29.a)

Question #49 - 50 of 112

Question ID: 1686758

Franklin computes the rate of change in the European put option delta value, given a $1 increase in the underlying equity. Using the information in Exhibit 1 and Exhibit 2, which of the following is the *closest* to Franklin's answer?

A) 0.0180.

B) −0.3264.

C) 0.6736.

Explanation

The correct value 0.0180 is referred to as the put option's Gamma.

The incorrect value −0.3264 is the delta of the put option.

The incorrect value 0.6736 is the call option's delta.

(Module 29.1, LOS 29.a)

Question #50 - 50 of 112

Question ID: 1686759

Franklin wants to know if the option sensitivities shown in Exhibit 2 have minimum or maximum bounds. Which of the following are the minimum and maximum bounds, respectively, for the put option delta?

A) −1 and 1.

B) There are no minimum or maximum bounds.

C) −1 and 0.

Explanation

The lower bound is achieved when the put option is far in the money so that it moves exactly in the opposite direction as the stock price. When the put option is far out of the money, the option delta is zero. Thus, the option price does not move even if the stock price moves since there is almost no chance that the option is going to be worth something at expiration.

(Module 29.1, LOS 29.a)

Question #51 of 112

Question ID: 1686841

How is the gamma of an option defined? Gamma is the change in the:

A) option price as the underlying security changes. ✗

B) delta as the price of the underlying security changes. ✓

C) vega as the option price changes. ✗

Explanation

Gamma is the rate of change in delta. It measures how fast the price sensitivity changes as the underlying asset price changes.

(Module 29.7, LOS 29.k)

Question #52 - 55 of 112

Question ID: 1686787

The one-year call option on Dale Corporation:

A) is underpriced. ✗

B) may be over or underpriced. The given information is not sufficient to give an answer. ✗

C) is overpriced. ✓

Explanation

The up movement parameter U=1.20, and the down movement parameter D=0.833. We calculate the probability of an up move π_U = (1 + 0.04 – 0.833)/(1.2 – 0.833) = 0.564. The call is out of the money in the event of a down movement, and has an intrinsic value of $20 in the event of an up movement. Therefore, the estimated value of the call is C = (0.564) × $20 / (1.04) = $10.85. Thus, the price of $11.11 is too high and the call is overpriced.

(Module 29.6, LOS 29.f)

Question #53 - 55 of 112

Question ID: 1686788

Bingly's sentiments towards the Black-Scholes-Merton (BSM) model regarding a lognormal distribution of prices and a variable risk-free rate are:

A) incorrect for both reasons.

B) correct concerning the distribution of stocks but incorrect concerning the risk-free rate.

C) correct for both reasons.

Explanation

The model requires many assumptions, e.g., the distribution of stock prices is lognormal and the risk-free rate is known and *constant*. Other assumptions are frictionless markets, the options are European, and the volatility is known and constant.

(Module 29.6, LOS 29.f)

Question #54 - 55 of 112

Question ID: 1686789

If Bingly forecasts the volatility for a stock and find that it is significantly greater than that implied by the prices of the puts and calls of the stock, he would conclude that:

A) puts and calls are underpriced.

B) the puts are overpriced and the calls are underpriced.

C) puts and calls are overpriced.

Explanation

There is a positive relationship between the volatility of the stock and the price of both puts and calls. A higher estimate of volatility implies that the prices of both puts and calls should be higher.

(Module 29.6, LOS 29.f)

Question #55 - 55 of 112

Question ID: 1686790

All else being equal, the greater the dividend paid by a stock the:

A) higher the call price and the lower the put price.

B) lower the call price and the lower the put price.

C) lower the call price and the higher the put price.

Explanation

When dividend payments occur during the life of the option, the price of the underlying stock is reduced (on the ex-dividend date). All else being equal, the lower price reduces the value of call options and increases the value of put options.

(Module 29.6, LOS 29.f)

Question #56 - 59 of 112

Question ID: 1686859

In order to create a delta-neutral hedge using put option contracts, Davalos would *most accurately* need to:

A) buy 2,000 contracts. ✗

B) sell 510,271 contracts. ✗

C) buy 5,103 contracts. ✓

Explanation

The delta of a put option is the delta of the corresponding call option minus- 1. The delta of a QJX put option is thus –0.3919. The number of put options needed is 200,000 / –0.3919 = –510,334 options or approximately 5,103 contracts per 100 shares. Gier is long the stock, to hedge with puts Davalos should also take a long position in the puts.

(Module 29.7, LOS 29.l)

Question #57 - 59 of 112

Question ID: 1686860

An equity swap to hedge the equity risk for Gier would result in a net return on the portfolio of a:

A) variable rate based on the total return of QJX stock. ✗

B) fixed rate of 1.5% per quarter. ✓

C) fixed rate of 4.5% for the year. ✗

Explanation

To offset the equity risk, Gier would pay a variable rate based on the total return of QJX and receive a fixed rate. The quoted rate is an annualized rate and since the swap is for three quarters or nine months, the full 6.0% will not be realized. The 6.0% annualized rate is equivalent to 1.5% per quarter. Any return on the portfolio would be passed on to the swap counterparty and Gier will be immune to equity market movements.

(Module 29.7, LOS 29.l)

Question #58 - 59 of 112

Question ID: 1686861

If the equity swap is implemented and after 3 months the stock price has increased to $106.00, the net cash flow for the swap is:

A) zero. ✗

B) a gain of $900,000. ✗

C) a loss of $900,000. ✓

Explanation

The equity swap requires Gier to pay a variable rate of total return on QJX and receive a fixed rate. If the stock appreciates, the swap results in a positive cash flow of 6.0%/4 × $20,000,000 = $300,000 and a negative cash flow of $20,000,000 × ($106/$100 – 1) = $1,200,000, summing to a net of outflow of $900,000. The swap plus the equity position result in an overall gain, as the gain on the stock more than offsets the loss on the equity swap.

(Module 29.7, LOS 29.l)

Question #59 - 59 of 112

Question ID: 1686862

Based on the futures information, an arbitrage opportunity can be exploited by:

A) buying the stock QJX, and selling the futures. ✓

B) selling the stock QJX and buying the futures. ✗

C) buying the futures and buying the stock QJX. ✗

Explanation

The calculated fair value of the futures contract is $100 ×(1+0.05)$^{0.75}$ = $103.73. The asset is relatively underpriced and the futures contract is overpriced. By buying the stock and selling the futures we can lock in a profit greater than the risk-free rate with no risk.

(Module 29.7, LOS 29.l)

Question #60 of 112

Question ID: 1686828

To the issuer of a floating rate note, a cap is equivalent to:

A) writing a series of interest rate calls. ✗

B) owning a series of calls on a fixed income security. ✗

C) owning a series of interest rate calls. ✓

Explanation

The issuer of the note is borrowing at a floating rate, and will have higher interest expenses if rates increase. A cap is equivalent to owning a series of interest rate calls at the cap rate that will pay the difference between the market rate and the cap rate. If interest rates increase, the payoff from the calls will compensate the borrower for the higher interest expenses.

(Module 29.6, LOS 29.j)

Question #61 of 112

Question ID: 1686817

A payer swaption gives its holder:

A) an obligation to enter a swap in the future as the fixed-rate payer. ✗

B) the right to enter a swap in the future as the floating-rate payer. ✗

C) the right to enter a swap in the future as the fixed-rate payer. ✓

Explanation

A payer swaption give its holder the right to enter a swap in the future as the fixed-rate payer.

(Module 29.6, LOS 29.j)

Question #62 of 112

Question ID: 1686846

Compared to the delta of a long position in a stock, the delta of an at-the-money call option on the stock is *most likely* to be:

A) the same.

B) less.

C) greater.

Explanation

The delta of an at-the-money call option is typically close to 0.5. The delta of a long position in the underlying stock is 1.0 by definition.

(Module 29.7, LOS 29.k)

Question #63 of 112

Question ID: 1686784

Which of the following is NOT one of the assumptions of the Black-Scholes-Merton option-pricing model?

A) The yield curve for risk-free assets is fixed over the term of the option.

B) There are no taxes and transactions costs are zero for options and arbitrage portfolios.

C) Early exercise is not allowed.

Explanation

The yield curve is assumed to be flat so that the risk-free rate of interest is known and *constant* over the term of the option. Having a fixed yield curve does not necessarily imply that the yield curve is flat. BSM assumptions include that markets are frictionless (no taxes, transactions costs) and that the options are European-style, meaning that early exercise is not allowed.

(Module 29.6, LOS 29.f)

Question #64 of 112

Question ID: 1686819

Cal Smart wrote a 90-day receiver swaption on a 1-year MRR-based semiannual-pay $10 million swap with an exercise rate of 3.8%. At expiration, the market rate and MRR yield curve are:

Fixed rate 3.763%

180-days 3.6%

360-days 3.8%

The payoff to the writer of the receiver swaption at expiration is *closest* to:

A) -$3,600.

B) $0.

C) $3,600.

Explanation

At expiration, the fixed rate is 3.763% which is below the exercise rate of 3.8%. The purchaser of the receiver swaption will exercise the option which allows them to receive a fixed rate of 3.8% from the writer of the option and pay the current rate of 3.763%.

The equivalent of two payments of (0.038 - 0.03763) × (180/360) × (10,000,000) will be made to the receiver swaption. One payment would have been received in 6 months and will be discounted back to the present at the 6-month rate. One payment would have been received in 12 months and will be discounted back to the present at the 12-month rate

The first payment, discounted to the present is (0.038 - 0.03763) × (180/360) × (10,000,000) × (1/1.018) = $1,817.28.

The second payment, discounted to the present is (0.038 - 0.03763) × (180/360) × (10,000,000) × (1/1.038) = $1,782.27

The total payoff for the writer is -$3,599.55.

(Module 29.6, LOS 29.j)

Question #65 of 112

Question ID: 1686785

A bond analyst decides to use the BSM model to price options on bond prices. This model will *most likely* be inadequate because:

A) the risk free rate must be constant and known.

B) the price of the underlying asset follows a lognormal distribution.

C) BSM cannot be modified to deal with cash flows like coupon payments.

Explanation

The BSM model is not useful for pricing options on bond prices and interest rates. In those cases, interest rate volatility is a key factor in determining the value of the option. BSM can be modified to deal with cash flows like coupon payments. The assumption that "the price of the underlying asset follows a lognormal distribution" is not applicable.

(Module 29.6, LOS 29.f)

Question #66 of 112

Question ID: 1686821

Which of the following *best* describes an interest rate cap? An interest rate cap is a package or portfolio of interest rate options that provide a positive payoff to the buyer if the:

A) T-Bond futures exceeds the strike price. ✗

B) reference rate exceeds the strike rate. ✓

C) reference rate is below the strike rate. ✗

Explanation

An interest rate cap is a package of European-type call options (called caplets) on a reference interest rate.

(Module 29.6, LOS 29.j)

Question #67 of 112

Question ID: 1686838

The value of a European call option on an asset with no cash flows is positively related to all of the following EXCEPT:

A) risk-free rate. ✗

B) exercise price. ✓

C) time to exercise. ✗

Explanation

The value of a call option decreases as the exercise price increases.

(Module 29.7, LOS 29.k)

Question #68 of 112

Question ID: 1686843

The value of a put option will be higher if, all else equal, the:

A) underlying asset has positive cash flows. ✓

B) underlying asset has less volatility. ✗

C) exercise price is lower. ✗

Explanation

Positive cash flows in the form of dividends will lower the price of the stock making it closer to being "in the money" which increases the value of the option as the stock price gets closer to the strike price.

(Module 29.7, LOS 29.k)

Question #69 of 112

Question ID: 1686771

Zetion Inc stock (current price $28) has 1-year call options with an exercise price of $30 trading at $2.07. The stock can increase by 15% or decrease by 13% over the next year and the risk-free rate is 3%. Arbitrage profits are *most likely*:

A) possible by purchasing 100 calls and short selling 28 shares. ✗

B) not possible. ✗

C) possible by purchasing 28 shares and writing 100 calls. ✓

Explanation

S^+ = 28(1.15) = 32.20; S^- = 28(0.87) = 24.36. C^+ = 32.20 – 30 = 2.20, C^- = 0.

H = (2.20 – 0) / (32.20 – 24.36) = 0.281

$$C_0 = hS_0 + \frac{(-hS^+ + C^+)}{(1+R_f)}$$

= 0.281 x 28 + [(- 0.281 x 32.20 + 2.20) / 1.03] = 1.22

Since the call price of $2.07 > 1.22, an arbitrage profit can be earned by writing calls and purchasing 0.281 shares per call written.

(Module 29.4, LOS 29.c)

Question #70 of 112

Question ID: 1686839

For a change in which of the following inputs into the Black-Scholes-Merton option pricing model will the direction of the change in a put's value and the direction of the change in a call's value be the same?

A) Exercise price.

B) Risk-free rate.

C) Volatility.

Explanation

A decrease/increase in the volatility of the price of the underlying asset will decrease/increase both put values and call values. A change in the values of the other inputs will have opposite effects on the values of puts and calls.

(Module 29.7, LOS 29.k)

Question #71 of 112

Question ID: 1686868

Two call options have the same delta but option A has a higher gamma than option B. When the price of the underlying asset increases, the number of option A calls necessary to hedge the price risk in 100 shares of stock, compared to the number of option B calls, is a:

A) larger (negative) number.

B) larger positive number.

C) smaller (negative) number.

Explanation

For call options larger gamma means that as the asset price increases, the delta of option A increases more than the delta of option B. Since the number of calls to hedge is (–1/delta)x(number of shares), the number of calls necessary for the hedge is a smaller (negative) number for option A than for option B.

(Module 29.7, LOS 29.l)

Question #72 of 112

Question ID: 1686793

Compared to the value of a call option on a stock with no dividends, a call option on an identical stock expected to pay a dividend during the term of the option will have a:

A) higher value only if it is an American style option.

B) lower value only if it is an American style option.

C) lower value in all cases.

Explanation

An expected dividend during the term of an option will decrease the value of a call option.

(Module 29.6, LOS 29.h)

Question #73 of 112

Question ID: 1686845

Which of the following statements regarding an option's price is CORRECT? An option's price is:

A) a decreasing function of the underlying asset's volatility.

B) a decreasing function of the underlying asset's volatility when it has a long time remaining until expiration and an increasing function of its volatility if the option is close to expiration.

C) an increasing function of the underlying asset's volatility.

Explanation

Since an option has limited risk but significant upside potential, its value always increases when the volatility of the underlying asset increases.

(Module 29.7, LOS 29.k)

Question #74 of 112

Question ID: 1686836

The value of a put option is positively related to all of the following EXCEPT:

A) time to maturity.

B) exercise price.