Question #1 of 24

Question ID: 1577430

The lower and upper bounds on European options will always:

A) be nonnegative. ✓

B) include a present value calculation of the exercise price. ✗

C) be positive. ✗

Explanation

Option values can never be negative, but they can be zero or positive, and therefore the lower and upper bounds on options is nonnegative.

The lower and upper bounds of all options include a present value calculation of the exercise price, except when calculating the upper bound on a European call option, which is simply the underlying asset price.

Option	Minimum Value	Maximum Value
European call	$c_t \geq \text{Max}[0, S_t - X(1 + Rf)^{-(T-t)}]$	S_t
European put	$p_t \geq \text{Max}[0, X(1 + Rf)^{-(T-t)} - S_t]$	$X(1 + Rf)^{-(T-t)}$

(Module 75.1, LOS 75.b)

Question #2 of 24

Question ID: 1577429

Which of the following statements about the difference in arbitrage in pricing forward commitments and options is correct?

A) Both the forward buyer and the option buyer pay no cash upfront. ✗

B) The forward buyer has an unlimited loss but the option buyer has a limited loss at maturity when the underlying is a stock. ✗

C) Only options have upper and lower no-arbitrage price bounds. ✓

Explanation

Because options are contingent claims, the right to exercise or not to exercise the option leads to establishing both upper and lower price bounds on options. In contrast, forward commitments represent obligations on both sides, and therefore there are no price bounds. However, there is a lower bound in cases where the underlying cannot have a negative value, for example, stocks. While the forward buyer pays no cash upfront, the option buyer pays a premium upfront.

(Module 75.1, LOS 75.b)

Question #3 of 24

Question ID: 1574493

The time value of an option is *most accurately* described as:

A) the amount by which the intrinsic value exceeds the option premium. ✗

B) equal to the entire premium for an out-of-the-money option. ✓

C) increasing as the option approaches its expiration date. ✗

Explanation

The price (or premium) of an option is its intrinsic value plus its time value. An out-of-the-money option has an intrinsic value of zero, so its entire premium consists of time value. Time value is zero at an option's expiration date. Time value is the amount by which an option's premium exceeds its intrinsic value.

(Module 75.1, LOS 75.a)

Question #4 of 24

Question ID: 1574487

Which of the following statements about moneyness is *most* accurate? When the stock price is:

A) below the strike price, a call option is in-the-money. ✗

B) above the strike price, a put option is in-the-money. ✗

C) above the strike price, a put option is out-of-the-money. ✓

Explanation

When the stock price is above the strike price, a put option is *out-of-the-money*.

When the stock price is below the strike price, a call option is *out-of-the-money*.

(Module 75.1, LOS 75.a)

Question #5 of 24

Question ID: 1574497

An increase in the riskless rate of interest, other things equal, will:

A) decrease call option values and decrease put option values. ✗

B) decrease call option values and increase put option values. ✗

C) increase call option values and decrease put option values. ✓

Explanation

An increase in the risk-free rate of interest will increase call option values and decrease put option values.

(Module 75.1, LOS 75.c)

Question #6 of 24

Question ID: 1574494

The value of a put option at expiration is *most likely* to be increased by:

A) a higher exercise price. ✓

B) a lower risk-free interest rate. ✗

C) higher volatility of the underlying asset price. ✗

Explanation

The value of an option at expiration is the greater of zero or its exercise value. A higher exercise price increases the exercise value of a put option because it gives the holder the right to sell the underlying asset for a higher price. The risk-free interest rate and volatility of the underlying asset price only affect the time value of options, which is zero at expiration.

(Module 75.1, LOS 75.c)

Question #7 of 24

Question ID: 1574485

An investor will exercise a European put option on a stock at its expiration date if the stock price is:

A) less than the exercise price. ✓

B) equal to the exercise price.

C) greater than the exercise price.

Explanation

A put option gives its owner the right to sell the underlying good at a specified exercise price for a specified time period. When the stock's price is less than the exercise price a put option has value and is said to be *in-the-money*.

(Module 75.1, LOS 75.a)

Question #8 of 24

Question ID: 1574500

Dividends or interest paid by the asset underlying a call option:

A) decrease the value of the option.

B) increase the value of the option.

C) have no effect on the value of the option.

Explanation

Dividends or interest paid by the underlying asset decrease the value of call options.

(Module 75.1, LOS 75.c)

Question #9 of 24

Question ID: 1574491

For a European style put option:

A) time value is equal to its market price minus its exercise value.

B) intrinsic value is equal to its market price plus its exercise value.

C) exercise value is equal to the underlying stock price minus its exercise price.

Explanation

The time value of an option (either a put or a call) is equal to its market price minus its exercise value. A put's exercise value is the maximum of zero or its exercise price minus the stock price. *Intrinsic value* is another term for exercise value.

(Module 75.1, LOS 75.a)

Question #10 of 24

Question ID: 1574488

A call option that is in the money:

A) has an exercise price less than the market price of the asset. ✓

B) has an exercise price greater than the market price of the asset. ✗

C) has a value greater than its purchase price. ✗

Explanation

A call option is in the money when the exercise price is less than the market price of the asset.

(Module 75.1, LOS 75.a)

Question #11 of 24

Question ID: 1574486

An investor holds two options on the same underlying stock, a call option with an exercise price of 25 and a put option with an exercise price of 30. If the market price of the stock is 27:

A) only one of the options is in the money. ✗

B) both options are in the money. ✓

C) neither option is in the money. ✗

Explanation

Both options are in the money. The put option is in the money because the option holder has the right to sell the stock for more than its market price. The call option is in the money because the option holder has the right to buy the stock for less than its market price.

(Module 75.1, LOS 75.a)

Question #12 of 24

Question ID: 1577427

Which of the following statements about the lower bound on a European put option is correct?

A) The lower bound can only be negative for deep out-of-the-money puts. ✗

B) The lower bound is always zero. ✗

C) The lower bound cannot exceed the difference between the present value of the exercise price and the underlying asset price. ✓

Explanation

The lower bound on a European put option is always zero or positive, but can never be negative. The lower bound is greater than zero or the difference between the present value of the exercise price and the underlying asset price ($p_t \geq Max[0, X(1 + Rf)^{-(T-t)} - S_t]$.

(Module 75.1, LOS 75.b)

Question #13 of 24

Question ID: 1577426

A one-year European call option has an exercise price of X = $500. At the time of the option's purchase, the underlying asset trades at S_0 = $485, and the risk-free rate is r = 1.25%. What is the no-arbitrage upper bound of this option in six months, if the underlying asset price is S_t = $510?

A) $510. ✓

B) $500. ✗

C) $507. ✗

Explanation

The upper bound of this option is simply the underlying asset price because no call buyer would pay more for the option than the asset's market price.

(Module 75.1, LOS 75.b)

Question #14 of 24

Question ID: 1574503

An investor has bought a European put option and written a European call option. Other things equal, a decrease in the risk-free rate will increase the value of:

A) only one of these option positions. ✗

B) both of these option positions. ✓

C) neither of these option positions. ✗

Explanation

A decrease in the risk-free rate would decrease call option values and increase put option values. Because this investor is short calls and long puts, both positions would increase in value.

(Module 75.1, LOS 75.c)

Question #15 of 24

Question ID: 1574502

Other things equal, a short put position would become more valuable as a result of an increase in:

A) the time to expiration. ✗

B) the price of the underlying asset. ✓

C) the volatility of the price of the underlying asset. ✗

Explanation

An increase in the price of the underlying asset would decrease the value of a put option, which would make a long position in the put less valuable and a short position more valuable. An increase in either the volatility of the underlying asset price or time to expiration would increase the put value and decrease the value of a short position.

(Module 75.1, LOS 75.c)

Question #16 of 24

Question ID: 1574490

At expiration, exercise value is equal to time value for:

A) an in-the-money call or an out-of-the-money put. ✗

B) an out-of-the-money call or an out-of-the-money put. ✓

C) an out-of-the-money call or an in-the-money put. ✗

Explanation

The time value of an option is zero at expiration. For an out-of-the-money option, the exercise value is zero at expiration.

(Module 75.1, LOS 75.a)

Question #17 of 24

Question ID: 1574499

Which of the following will increase the value of a call option?

A) An increase in the exercise price.

B) A dividend on the underlying asset.

C) An increase in volatility.

Explanation

Increased volatility of the underlying asset increases both put values and call values. A higher exercise price or an increase in cash flows on the underlying asset decrease the value of a call option.

(Module 75.1, LOS 75.c)

Question #18 of 24

Question ID: 1574496

Which of the following statements about long positions in put and call options is *most accurate*? Profits from a long call:

A) and a long put are positively correlated with the stock price.

B) are negatively correlated with the stock price and the profits from a long put are positively correlated with the stock price.

C) are positively correlated with the stock price and the profits from a long put are negatively correlated with the stock price.

Explanation

For a call, the buyer's (or the long position's) potential gain is unlimited. The call option is in-the-money when the stock price (S) exceeds the strike price (X). Thus, the buyer's profits are positively correlated with the stock price. For a put, the buyer's (or the long position's) potential gain is equal to the strike price less the premium. A put option is in-the-money when X > S. Thus, a put buyer wants a high exercise price and a low stock price. Thus, the buyer's profits are negatively correlated with the stock price.

(Module 75.1, LOS 75.c)

Question #19 of 24

Question ID: 1574498

A decrease in the riskless rate of interest, other things equal, will:

A) decrease call option values and decrease put option values. ✗

B) increase call option values and decrease put option values. ✗

C) decrease call option values and increase put option values. ✓

Explanation

A decrease in the risk-free rate of interest will decrease call option values and increase put option values.

(Module 75.1, LOS 75.c)

Question #20 of 24

Question ID: 1574492

The time value of a European call option with 30 days to expiration will *most likely* be:

A) less than the current option premium if the option is currently in-the-money. ✓

B) greater than the current option premium if the option is currently out-of-the-money. ✗

C) equal to the intrinsic value if the exercise price is greater than the current spot price. ✗

Explanation

The option premium is made up of time value and intrinsic value. Intrinsic value is positive if an option is in-the-money and zero otherwise. Time value is always positive for call options. If the option still has 30 days until expiration and is in-the-money, the option premium will be the positive intrinsic value, plus the positive time value. Hence, the time value will be less than the premium.

If the option is out-of-the-money, the intrinsic value will be zero, and the option premium will be equal to the time value. If the exercise price is greater than the current spot price, the call option is out-of-the-money and hence the intrinsic value again is zero. But as the call option still has time to expiration, the time value will be positive.

(Module 75.1, LOS 75.a)

Question #21 of 24

Question ID: 1574495

A call option's intrinsic value:

A) decreases as the stock price increases above the strike price, while a put option's intrinsic value increases as the stock price decreases below the strike price. ✗

B) increases as the stock price increases above the strike price, while a put option's intrinsic value decreases as the stock price decreases below the strike price. ✗

C) increases as the stock price increases above the strike price, while a put option's intrinsic value increases as the stock price decreases below the strike price. ✓

Explanation

For a call option, as the underlying stock price increases above the strike price, the option moves farther into the money, and the intrinsic value is increasing. For a put option, as the underlying stock price decreases below the strike price, the option moves farther into the money, and the intrinsic value is increasing.

(Module 75.1, LOS 75.c)

Question #22 of 24

Question ID: 1574501

Compared to an otherwise identical European put option, one that has a longer time to expiration:

A) must be worth more than the put that is nearer to expiration. ✗

B) must be worth at least as much as the put that is nearer to expiration. ✗

C) may be worth less than the put that is nearer to expiration. ✓

Explanation

Normally, options with greater time to expiration are worth more than otherwise identical options that are nearer to expiration. However, in some circumstances, this relationship may not hold for European puts. For example, if the price of the underlying asset goes to zero, the European put with less time to expiration may be worth more because the put holder will receive the exercise price earlier.

(Module 75.1, LOS 75.c)

Question #23 of 24

Question ID: 1574489

An option's intrinsic value is equal to the amount the option is:

A) in the money, and the time value is the market value minus the intrinsic value. ✓

B) in the money, and the time value is the intrinsic value minus the market value. ✗

C) out of the money, and the time value is the market value minus the intrinsic value. ✗

Explanation

Intrinsic value is the amount the option is in the money. In effect it is the value that would be realized if the option were at expiration. Prior to expiration, the option's market value will normally exceed its intrinsic value. The difference between market value and intrinsic value is called time value.

(Module 75.1, LOS 75.a)

Question #24 of 24

Question ID: 1577428

The upper bound of a European put option is the:

A) exercise price. ✓

B) difference between the present value of the exercise price and the underlying asset price. ✗

C) present value of the exercise price. ✗

Explanation

Because European puts cannot be exercised prior to expiration, their maximum value (or upper bound) is the present value of the exercise price, discounted at the risk-free rate, or $X / (1 + Rf)^{(T-t)}$.

(Module 75.1, LOS 75.b)