

- 20.** Assume the Black-Scholes framework. Consider a stock, and a European call option and a European put option on the stock. The current stock price, call price, and put price are 45.00, 4.45, and 1.90, respectively.

Investor A purchases two calls and one put. Investor B purchases two calls and writes three puts.

The current elasticity of Investor A's portfolio is 5.0. The current delta of Investor B's portfolio is 3.4.

Calculate the current put-option elasticity.

- (A) -0.55
- (B) -1.15
- (C) -8.64
- (D) -13.03
- (E) -27.24

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- 25.** Consider a chooser option (also known as an as-you-like-it option) on a nondividend-paying stock. At time 1, its holder will choose whether it becomes a European call option or a European put option, each of which will expire at time 3 with a strike price of \$100.

The chooser option price is \$20 at time $t = 0$.

The stock price is \$95 at time $t = 0$. Let $C(T)$ denote the price of a European call option at time $t = 0$ on the stock expiring at time T , $T > 0$, with a strike price of \$100.

You are given:

- (i) The risk-free interest rate is 0.
- (ii) $C(1) = \$4$.

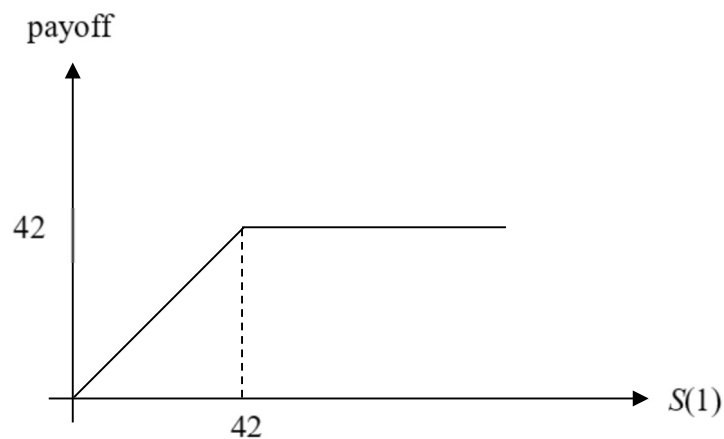
Determine $C(3)$.

- (A) \$ 9
- (B) \$11
- (C) \$13
- (D) \$15
- (E) \$17

41. Assume the Black-Scholes framework. Consider a 1-year European contingent claim on a stock.

You are given:

- (i) The time-0 stock price is 45.
- (ii) The stock's volatility is 25%.
- (iii) The stock pays dividends continuously at a rate proportional to its price. The dividend yield is 3%.
- (iv) The continuously compounded risk-free interest rate is 7%.
- (v) The time-1 payoff of the contingent claim is as follows:



Calculate the time-0 contingent-claim elasticity.

- (A) 0.24
- (B) 0.29
- (C) 0.34
- (D) 0.39
- (E) 0.44