Assignment 9

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

1) If the S&P 500 index is given by $S(t) = e^{(r - q/2)t - q/2 \sigma t^2}$, then which of the following is true?
   a) $S(t)$ follows normal distribution with mean $0$ and variance $1$
   b) $S(t)$ follows normal distribution with mean $0$ and variance $\sqrt{t}$
   c) $S(t)$ follows normal distribution with mean $0$ and variance $t$
   d) $S(t)$ follows normal distribution with mean $0$ and variance $\sigma^2$

   No, the answer is incorrect. Score 0

   Accepted Answer:
   a) $S(t)$ follows normal distribution with mean $0$ and variance $1$

2) If the stock and the bond follow $d(S(t)) = \mu_S(S(t))dt + \sigma_S(S(t))dW_1(t)$ and $d(B(t)) = \mu_B(B(t))dt$, respectively, then which of the following gives the model for a portfolio, where an amount of $\alpha$ out of $X(t)$ is invested in stocks and $X(t) - \alpha$ is invested in bonds?
   a) $d(X(t)) = \mu(X(t))dt + \sigma(X(t))dW(t)$
   b) $d(X(t)) = \mu(X(t))dt + \sigma(X(t))dW(t)$
   c) $d(X(t)) = \mu(X(t))dt + \sigma(X(t))dW(t)$
   d) $d(X(t)) = \mu(X(t))dt + \sigma(X(t))dW(t)$

   No, the answer is incorrect. Score 0

   Accepted Answer:
   d) $d(X(t)) = \mu(X(t))dt + \sigma(X(t))dW(t)$

3) If $\mu = r$, then the HRS equation reduces to which of the following:
   a) $\mu_S^{\alpha}V_0^{\frac{1}{2}} + \sigma_S^{\alpha}V_0^{\frac{1}{2}} = 0$
   b) $\mu_S^{\alpha}V_0^{\frac{1}{2}} + \sigma_S^{\alpha}V_0^{\frac{1}{2}} = 0$
   c) $\mu_S^{\alpha}V_0^{\frac{1}{2}} + \sigma_S^{\alpha}V_0^{\frac{1}{2}} = 0$
   d) $\mu_S^{\alpha}V_0^{\frac{1}{2}} + \sigma_S^{\alpha}V_0^{\frac{1}{2}} = 0$

   No, the answer is incorrect. Score 0

   Accepted Answer:
   d) $\mu_S^{\alpha}V_0^{\frac{1}{2}} + \sigma_S^{\alpha}V_0^{\frac{1}{2}} = 0$

4) If the stock follows the price process $d(S(t)) = \mu_S(S(t))dt + \sigma_S(S(t))dW(t)$ and the bond follows the price process $d(B(t)) = \mu_B(B(t))dt$, then the HRS equation is given by:
   a) $V_0^{1/2} + V_0^{1/2} = 0$
   b) $V_0^{1/2} + V_0^{1/2} = 0$
   c) $V_0^{1/2} + V_0^{1/2} = 0$
   d) $V_0^{1/2} + V_0^{1/2} = 0$

   No, the answer is incorrect. Score 0

   Accepted Answer:
   d) $V_0^{1/2} + V_0^{1/2} = 0$

5) If the stock follows the price process $d(S(t)) = \mu_S(S(t))dt + \sigma_S(S(t))dW(t)$ and the bond follows the price process $d(B(t)) = \mu_B(B(t))dt$, and the investor has log utility, then the optimal portfolio of wealth $X(t)$ at time $t = 0$ (up to time $t = 1$), invested in stock equals:

   No, the answer is incorrect. Score 0

   Accepted Answer:
   Type: Range: 0.325, 0.325

6) If the stock follows the price process $d(S(t)) = \mu_S(S(t))dt + \sigma_S(S(t))dW(t)$ and the bond follows the price process $d(B(t)) = \mu_B(B(t))dt$, and the investor has the utility $U(x) = -e^{-x}$, then the optimal portfolio of wealth $X(t)$ at time $t = 0$ (up to time $t = 1$), invested in stock equals:

   No, the answer is incorrect. Score 0

   Accepted Answer:
   Type: Range: 0.6666, 0.6666

7) If we consider the HRS framework for an investor with log utility, then the optimal consumption at time $t = 0$ with wealth $X(0) = 1000$, up to time $t = 1$, equals:

   No, the answer is incorrect. Score 0

   Accepted Answer:
   Type: Range: 499.5

8) If $E(\alpha) = \frac{3 \times \ln(X(1))}{2 \ln(X(0))}$, then $E\left[ \eta \cdot \frac{1}{2} \ln(X(0)) \right]$ equals:

   No, the answer is incorrect. Score 0

   Accepted Answer:
   Type: Range: 0, 0