UNIVERSITY OF TEXAS AT AUSTIN

Quiz #8

Review of options and forwards.

In preparation for the next class, please solve the following problems:

Problem 8.1. (5 points) For a continuous-dividend-paying asset whose price is denoted by $\mathbf{S} = \{S(t), t \geq 0\}$ with the dividend yield δ, what is the expression for:

   (i) (2 points) the **prepaid-forward** price for delivery of one unit of the asset at time$-T$;

   (ii) (3 points) the **forward** price for delivery of one unit of the asset at time$-T$

Solution:

$$F_{0,T}^P(S) = e^{-\delta T} S(0), \quad F_{0,T}(S) = e^{(r-\delta)T} S(0).$$

Problem 8.2. (4 points) Consider an asset with the price is denoted by $\mathbf{S} = \{S(t), t \geq 0\}$.

(2 points) What is the expression for the **payoff** of a long $K-$strike European call on that asset with exercise date T?

Solution:

$$V_C(T) = (S(T) - K)_+$$

(2 points) What is the expression for the **payoff** of a long $K-$strike European put on that asset with exercise date T?

Solution:
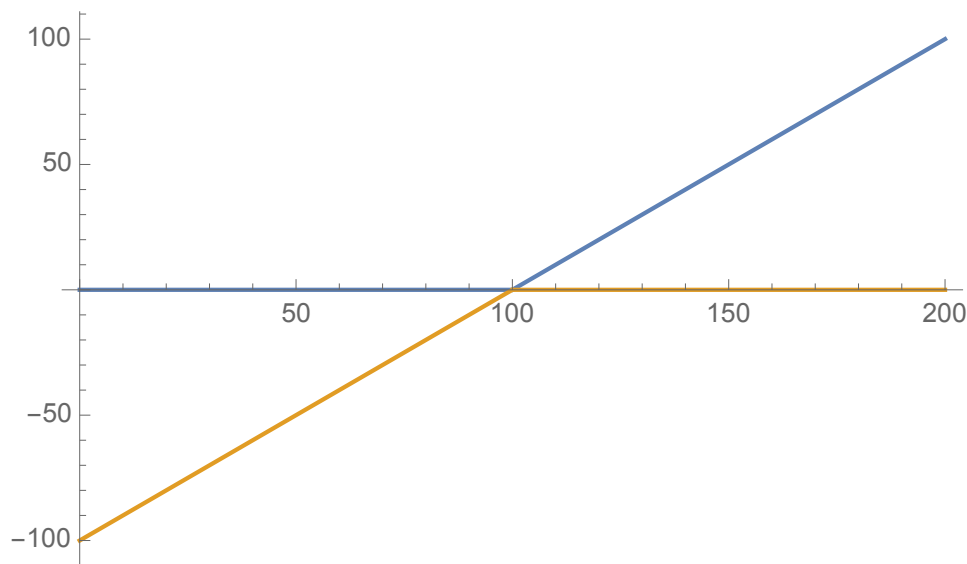
$$V_P(T) = (K - S(T))_+$$

Problem 8.3. (6 points)

   Consider an asset with the price is denoted by $\mathbf{S} = \{S(t), t \geq 0\}$.

   Portfolio A consists of the following components:

- a <u>long</u> $K-$strike European call on $\mathbf{S}$ with exercise date T, and
- a <u>short</u> $K-$strike European put on $\mathbf{S}$ with exercise date T.

   Draw the payoff curve of the above portfolio.

Solution: