

without option

$$S(0) = 100, S(1) = \begin{cases} 160 & \rightarrow 0.25 \\ 40 & \rightarrow 0.75 \end{cases}$$

$$E(k_s) = k_s = \begin{cases} 0.6 & \rightarrow 0.25 \\ -0.6 & \rightarrow 0.75 \end{cases}$$

$$E(k_s) = 0.15 + (-0.45) = -0.3$$

$$\sigma_s = \sqrt{(0.6 + 0.3)^2 (0.25) + (-0.6 + 0.3)^2 (0.75)} =$$

$$\sigma_s = \sqrt{0.2025 + 0.0675} = 0.5196$$

$$\text{cost of buying one share} = 100 (0.5196) = \\ = 51.69$$

|| 1.

with option

$$C(D) = \max(S(D) - X, 0)$$

$$160 - 100 = 60 \\ 100 - 100 = 0 \Rightarrow 60x$$

$$C(D) = \begin{cases} 60 \\ 0 \end{cases}$$

$$C(0) = \frac{1}{2}(100) + \frac{-2}{11}(100) \\ = 31.8182$$

find x & y

$$x160 + y110 = 60$$

$$x40 + y110 = 0$$

$$\therefore x = \frac{1}{2} \quad y = \frac{-2}{11}$$

$$k_c = \begin{cases} 0.8857 & \rightarrow 0.25 \\ -1 & \rightarrow 0.75 \end{cases}$$

$$E(k_c) = 0.8857(0.25) + -0.75 = -0.528575$$

$$\sigma_c = \sqrt{(0.8857 + 0.528575)^2(0.25) + (-1 + 0.528575)^2(0.75)}$$

$$= \sqrt{0.5 + 0.16668}$$

$$= 0.8165$$

$$\text{cost of buying one share} = 31.8182(0.8165)$$

$$= 25.98$$