

Question #190

Key: B

$$E(\theta) = 0.05(0.8) + 0.3(0.2) = 0.1,$$

$$E(\theta^2) = 0.05^2(0.8) + 0.3^2(0.2) = 0.02,$$

$$\mu(\theta) = 0(2\theta) + 1(\theta) + 2(1 - 3\theta) = 2 - 5\theta,$$

$$v(\theta) = 0^2(2\theta) + 1^2(\theta) + 2^2(1 - 3\theta) - (2 - 5\theta)^2 = 9\theta - 25\theta^2,$$

$$\mu = E(2 - 5\theta) = 2 - 5(0.1) = 1.5,$$

$$v = EVPV = E(9\theta - 25\theta^2) = 9(0.1) - 25(0.02) = 0.4,$$

$$a = VHM = Var(2 - 5\theta) = 25Var(\theta) = 25(0.02 - 0.1^2) = 0.25,$$

$$k = v/a = 0.4/0.25 = 1.6, Z = \frac{1}{1+1.6} = \frac{5}{13},$$

$$P = \frac{5}{13}2 + \frac{8}{13}1.5 = 1.6923.$$