

Question # 55**Answer: B**

$$\Pr(\text{class1} | 1) = \frac{(1/2)(1/3)}{(1/2)(1/3) + (1/3)(1/6) + (1/6)(0)} = \frac{3}{4}$$

$$\Pr(\text{class2} | 1) = \frac{(1/3)(1/6)}{(1/2)(1/3) + (1/3)(1/6) + (1/6)(0)} = \frac{1}{4}$$

$$\Pr(\text{class3} | 1) = \frac{(1/6)(0)}{(1/2)(1/3) + (1/3)(1/6) + (1/6)(0)} = 0$$

because the prior probabilities for the three classes are $1/2$, $1/3$, and $1/6$ respectively.

The class means are

$$\mu(1) = (1/3)(0) + (1/3)(1) + (1/3)(2) = 1$$

$$\mu(2) = (1/6)(1) + (2/3)(2) + (1/6)(3) = 2.$$

The expectation is

$$E(X_2 | 1) = (3/4)(1) + (1/4)(2) = 1.25.$$