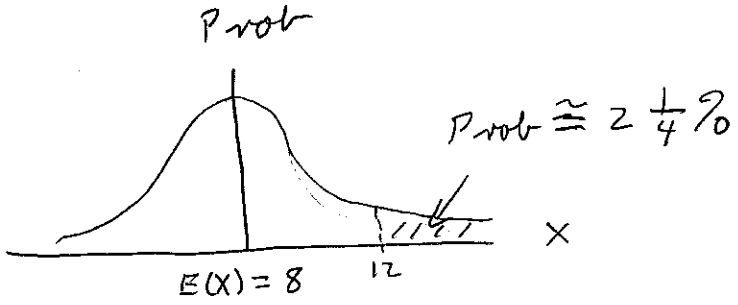
Handout 2 answers

BUAD 300
Prof. Robinson
Review Problems from Handout #2

7. If x is normally distributed, and Hyp. X = 12, E(X) = 8, $\sigma_x = 2$, what is prob($x \leq$ Hyp. X)? What is prob ($x >$ Hyp. X)? (Find the answer from the z tables on the inside cover of your text.)

$$z_{calc} = \frac{HYP\ X - E(X)}{\sigma_x} = \frac{12 - 8}{2} = 2$$

$$Prob(X > HYP.\ X) = 1 - .9772 = .0228 \cong 2\tfrac{1}{4}\%$$

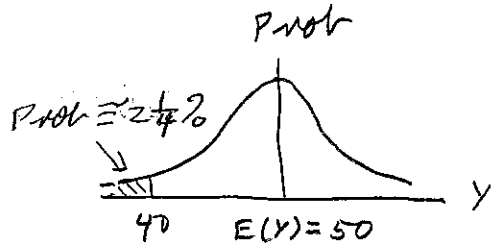


8. A random variable Y is normally distributed with E(Y) = 50, and $\sigma_Y = 5$. What is the probability of Y < 40? What is the probability that Y ≥ 40? What is the probability that $40 \leq Y < 50$?

$$z_{calc.} = \frac{HYP.\ Y - E(Y)}{\sigma_Y} = \frac{40 - 50}{5} = -2$$

$$Prob(Y < 40) = .0228 \cong 2\tfrac{1}{4}\%$$

$$Prob(Y \geq 40) = 1 - .0228 = .9772$$

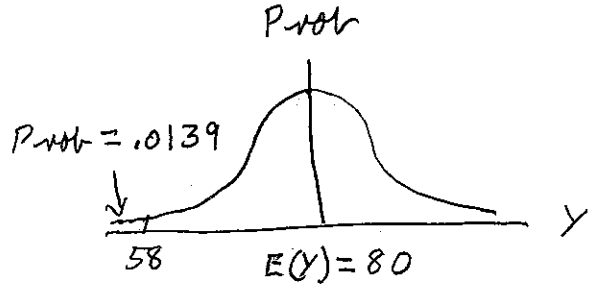


$$Prob(40 \leq Y < 50) = .5 - .0228$$
$$= .4772$$

9. A random variable Y is normally distributed with E(Y) = 80, and $\sigma_Y = 10$. What is the probability of Y < 58? What is the probability that Y ≥ 58? What is the probability that 58 ≤ Y < 80?

$$Z_{calc} = \frac{HYP.\ Y - E(Y)}{\sigma_Y} = \frac{58 - 80}{10} = -\frac{22}{10} = -2.2$$

$Prob(Y < 58) = .0139$



$Prob(Y \geq 58) = 1 - .0139$

$= .9861$

$Prob(58 \leq Y < 80) = .5 - .0139$

$= .4861$