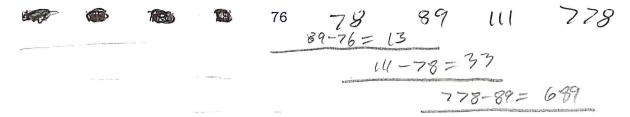
1) Consider the following data set: votes for preseason 1A basketball poll Nov. 22, 2011, WSIL News. Find shorth(3).



2) Suppose  $X \sim \text{Inverse Weibull}(\theta = 100, \tau = 1)$ . Simulate two values of  $x_i$  from this distribution if  $u_1 = 0.69$  and  $u_2 = 0.13$ . Hint:  $x_i = F^{-1}(u_i)$  where  $F^{-1}(u) = +\theta[-\log(u)]^{-1/\tau}$ .

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$$X_1 = -100 \left[ \log \left( 0.69 \right) \right]^{\frac{1}{2}} = \left[ 296.4955 \right]$$

$$X_2 = -100 \left[ \log \left( 0.13/\right) \right]^{\frac{1}{2}} = \left[ 49.0143 \right]$$

3) A hospital requires about 40 percent of its surgical patients to seek a second opinion. Find the approximate probability that the hospital will ask at least 18 of its next 50 surgical patients to seek a second opinion. (Hint: Let Y be the number of patients required to seek a second opinion, then Y is binomial (n = 50, p = 0.4). Let X be a normal RV with mean  $\mu = np$  and SD  $\sigma = \sqrt{np(1-p)}$  and find  $P(X \ge 17.5)$ .)

$$M = nP = 50 (.41 = 20), \sigma = nP(PP) = 50(.41.6 = J12 = 3.464)$$

$$P(1718) \sim P(x > 17.5) + f_{17.5} = 2 = 17.5.20 = -0.72$$

$$\frac{1}{3.4641} = -0.72$$

$$-0.71 = 0.71$$

$$-0.71 = 0.7359$$

4) Suppose A(t) follows an arithmetic Brownian motion with drift  $\mu = 5$  and volatility  $\sigma = 4$ . If A(5) = 25, calculate the probability that  $A(8) \le 47$ .

Hint: see problem done in class and exam 3 review 90):  $W \sim A(t+s)|A(t) \sim N(A(t) + \mu s, \sigma^2 s)$ . Here t = 5 and s = 3. Want  $P(W \le 47)$ .

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