

(6.90) Normal ($\mu=68$, $\sigma=10$) let this be X

a) b/w 73 and 80 $\rightarrow P(73 < X < 80)$

$$Z_{73} = \frac{X - \mu}{\sigma} = \frac{73 - 68}{10} = 0.5$$

$$Z_{80} = \frac{80 - 68}{10} = 1.2$$

$$P(73 < X < 80) = 0.1935$$

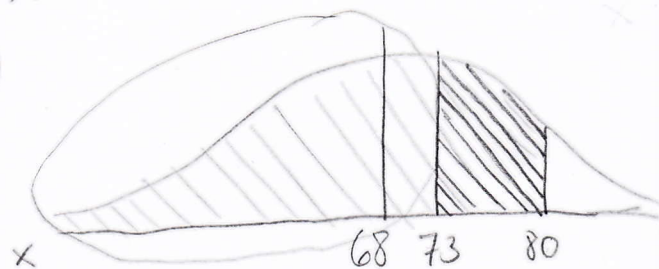
b) at least 75 $\rightarrow P(X > 75)$

$$1 - P(X < 75)$$

$$Z_{75} = \frac{75 - 68}{10} = 0.7$$

$$1 - P(Z < 0.7) = 1 - 0.7580 = 0.2420$$

$$P(X > 75) = 0.2420$$



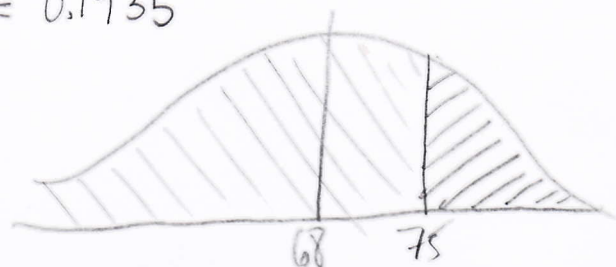
$$P(73 < X < 80)$$

$$= P(X < 80) - P(X < 73)$$

$$= P(Z < 1.2) - P(Z < 0.5)$$

$$= 0.8849 - 0.6915$$

$$= 0.1935$$

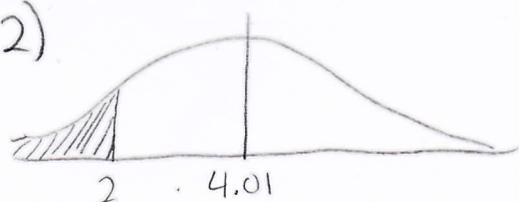


(6.102) Time b/w elephant pregnancies is Normal ($\mu=4.01$, $\sigma=0.94$)

a) less than 2 years

let X be our variable

$$P(X < 2)$$



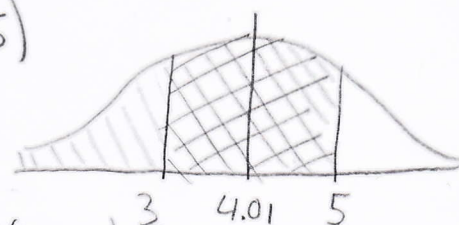
$$Z = \frac{X - \mu}{\sigma} = \frac{2 - 4.01}{0.94} = -2.138$$

$$P(Z < -2.138) = 0.0163$$

1.63% of elephants have time b/w pregnancies less than two years.

b) b/w 3 and 5 years <years>

$$P(3 < X < 5)$$



$$P(X < 5) - P(X < 3)$$

$$Z_5 = \frac{5 - 4.01}{0.94} = 1.053$$

$$Z_3 = \frac{3 - 4.01}{0.94} = -1.074$$

$$P(Z < 1.053) - P(Z < -1.074)$$

$$= 0.8538 - 0.1414$$

$$= 0.7124$$

71.24% of elephants have time b/w pregnancies b/w 3 and 5 years.