6.28  
\[ X = \text{Travel management professional's salary} \]

P257  
Average salary \( \mu = $97,300 \), st. dev. \( \sigma = 39,000 \)

\( n = 50 \)

\( \overline{x} = \text{average salary for a sample of } n = 50 \)

Distr. of \( \overline{x} \)

a) \( \mu_{\overline{x}} = \mu = $97,300 \)

b) \( \sigma_{\overline{x}} = \frac{\sigma}{\sqrt{n}} = \frac{39,000}{\sqrt{50}} = 4,242.681 \)

c) Because \( n = 50 \) is > 30, the distr. of \( \overline{x} \) is APPROX Normal.

d) \( Z = \frac{\overline{x} - \mu_{\overline{x}}}{\sigma_{\overline{x}}} = \frac{\overline{x} - 97,300}{4,242.681} \)

For \( \overline{x} = 89,500 \) \( \Rightarrow Z = \frac{89,500 - 97,300}{4,242.681} = 1.84 \)

e) \( P[\overline{x} > 89,500] = P[Z > 1.84] = .5 + .4671 = .9671 \)

6.28(b) For Pop. \( \mu = 30, \sigma = 16 \)

P257  
Sample size \( n = 100 \) is large; therefore, distr. of sample mean \( \overline{x} \) is APPROX Normal with mean \( \mu_{\overline{x}} = \mu = 30 \) and st. dev.

\[ \sigma_{\overline{x}} = \frac{\sigma}{\sqrt{n}} = \frac{16}{10} = 1.6 \]

Thus \( Z = \frac{\overline{x} - \mu_{\overline{x}}}{\sigma_{\overline{x}}} = \frac{\overline{x} - 30}{1.6} \)
By \( P\left[22.1 \leq x \leq 26.8\right] \)

For \( \bar{x} = 22.1 \), \( z_1 = \frac{22.1 - 30}{1.6} = -4.94 \)

For \( \bar{x} = 26.8 \), \( z_2 = \frac{26.8 - 30}{1.6} = -2.00 \)

From table for \( z_1 = -4.94 \), area \( A_1 = .50 \)

From table for \( z_2 = -2.00 \), area \( A_2 = .4772 \)

\[ P\left[22.1 \leq x \leq 26.8\right] = P\left[-4.94 \leq z \leq -2.00\right] = A_1 - A_2 \]

\[ = .5000 - .4772 = .0228 \]