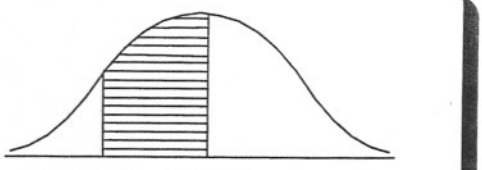
Practice Set 10 Continuous Normal Probability Distributions

I. Sales commissions paid by Darin's Music Emporium are normally distributed with a mean of \$25,000 and a standard deviation of \$5,000. Solve the following being sure to draw a graph of each distribution.

A. $P(\$15,000 \le x < \$25,000)$

$$Z = \frac{x-\mu}{\sigma} = \frac{\$15,000 - \$25,000}{\$5,000} = \frac{-\$10,000}{\$5,000} = -2 \rightarrow .4772$$

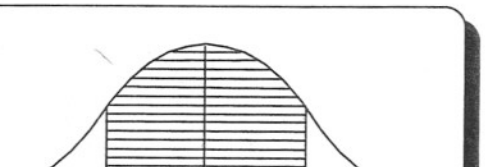


B. $P(\$20,000 \le x < \$30,000)$

$$Z = \frac{x-\mu}{\sigma} = \frac{\$20,000 - \$25,000}{\$5,000} = \frac{-\$5,000}{\$5,000} = -1 \rightarrow .3413$$

$$Z = \frac{x-\mu}{\sigma} = \frac{\$30,000 - \$25,000}{\$5,000} = \frac{\$5,000}{\$5,000} = 1 \rightarrow .3413$$

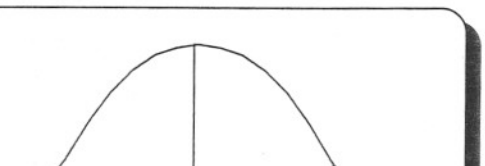
$$.3413 + .3413 = .6826 \rightarrow 68.26\%$$



C. $P(x \ge \$37,550)$

$$Z = \frac{x-\mu}{\sigma} = \frac{\$37,550 - \$25,000}{\$5,000} = \frac{\$12,550}{\$5,000} = 2.51 \rightarrow .4940$$

$$\begin{array}{r} .5000 \\ -\ .4940 \\ \hline .0060 \rightarrow .6\% \end{array}$$



D. $P(\$27,500 \le x < \$32,500)$

$$Z = \frac{x-\mu}{\sigma} = \frac{\$32,500 - \$25,000}{\$5,000} = \frac{\$7,500}{\$5,000} = 1.5 \rightarrow .4332$$

$$Z = \frac{x-\mu}{\sigma} = \frac{\$27,500 - \$25,000}{\$5,000} = \frac{\$2,500}{\$5,000} = .5 \rightarrow .1915$$

$$.4332 - .1915 = .2417 \rightarrow 24.17\%$$