II. Grades of State University graduates are normally distributed with a mean of 3.0 and a standard deviation of .3. Calculate the following being sure to graph each question.

A. What grade point average is required to be in the top 5% of the graduating class?

\[ 50\% - 5\% = 45\% \rightarrow Z = 1.65 \]
\[ \mu \pm Z\sigma \]
\[ 3.0 + 1.65(.3) \]
\[ 3.0 + .50 \]
\[ 3.50 \]

\[ x \]

B. Calculate the interquartile range.

\[ 25\% \rightarrow Z = .67 \]
\[ \mu \pm Z\sigma \]
\[ 3.0 \pm .67(.3) \]
\[ 3.0 \pm .20 \]
\[ 2.80 \leftrightarrow 3.20 \]

C. An eccentric alumnus left scholarship money for students in the third decile from the bottom of their class. Determine the range for the third decile. Would a student with a 2.8 grade point average qualify for this scholarship?

\[ 30\% \rightarrow Z = .84 \]
\[ 20\% \rightarrow Z = .52 \]
\[ 3.0 - .84(.3) \]
\[ 3.0 - .52(.3) \]
\[ 3.0 - .25 \]
\[ 3.0 - .16 \]
\[ 2.75 \]
\[ 2.84 \]
\[ \frac{2.75}{2.84} \leftrightarrow \text{Yes!} \]

D. What is the median grade point average of this class?

The median is 3.0 because with a normal distribution, the mean and median are equal.