Answer on Question #48215 – Math – Statistics and Probability

The SAT reasoning test is perhaps the most widely used standardized test for college admissions in US. Scores follow a normal distribution with a mean of 1500 and a standard deviation of 300. Clinton College would like to offer an honors scholarship to students who score in the top of 5% of this list. What is the minimum score that qualified for the scholarship?

Solution

Since you want to know what the top of 5% scores would look like, the area to the left would be 0.95. That is, a z-score of $Z = 1.645$:

$$P(z < Z) = 0.95 \to Z = 1.645.$$

The minimum score that qualified for the scholarship is

$$X = \mu + Z \cdot \sigma = 1500 + 1.645 \cdot 300 = 1993.5.$$

But the scores are natural numbers, so $X_{min} = 1994$.

Answer: $\mathbf{1994}$.