

Answer on Question #70023 – Math – Statistics and Probability

Question

The height of students in a school is normally distributed with mean 138 centimeters and standard deviation equal to 15 centimeters. What is the minimum height of a student such that $P(X \geq x) = 0.0548$?

Solution

To find the corresponding Z-value, we should evaluate $P(X \leq x)$:

$$P(X \leq x) = 1 - P(X \geq x) = 1 - 0.0548 = 0.9452$$

From the statistical tables, the corresponding Z-score is

$$z = 1.60$$

Z-score for any particular X can be estimated as

$$z = \frac{X - \mu}{\sigma}$$

Therefore,

$$X = z\sigma + \mu = 1.60 \cdot 15 + 138 = 162$$

Answer: $X = 162$