ANSWER to Question #84097 – Math – Statistics and Probability

We know that if random variable

$$X \square N\left(\mu, \sigma^2\right) then\ Z = \frac{X - \mu}{\sigma} \square N(0,1)$$

$$given\ height\ H \square N\left(10, 1.5^2\right) then\ Z = \frac{H - 10}{1.5} \square N(0,1)$$
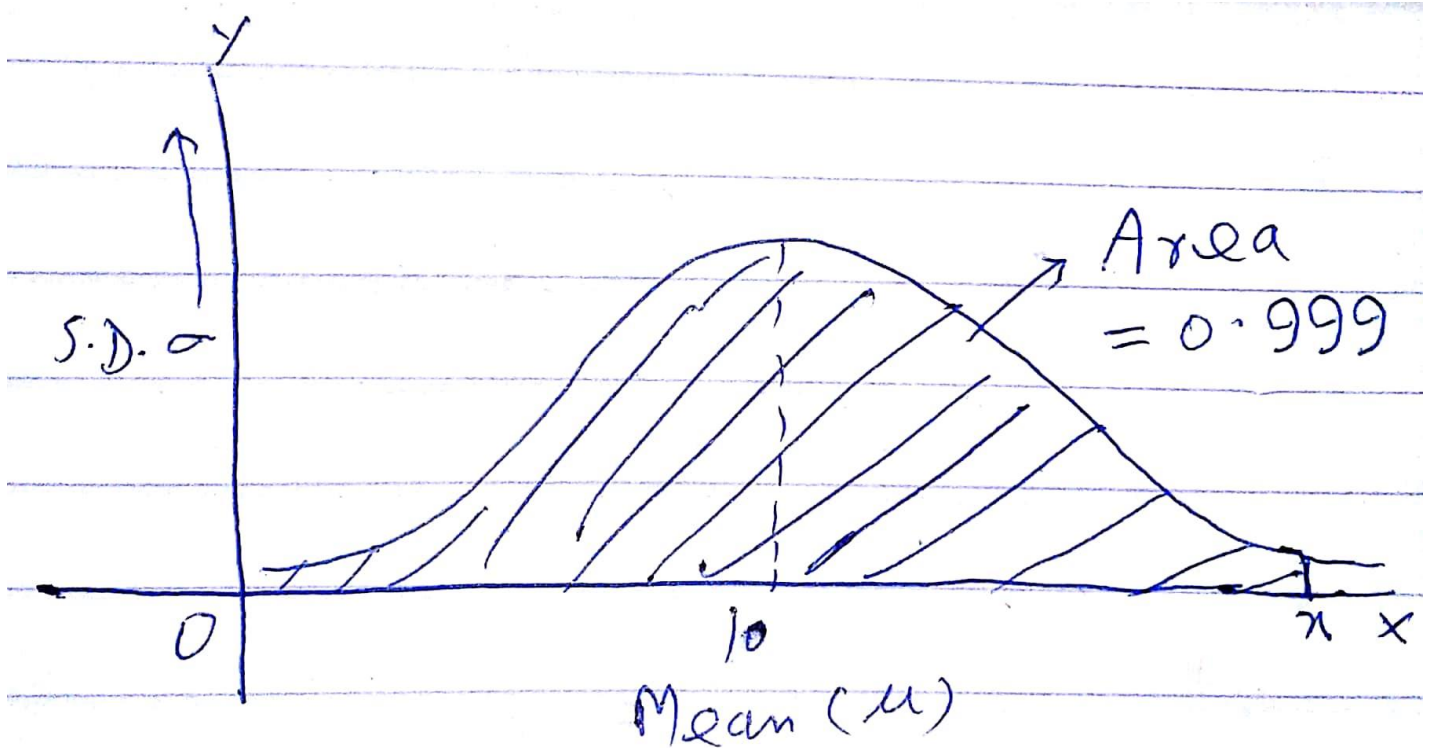
$$Let\ P(H \leq x) = 0.999$$

$$\Rightarrow P\left(Z = \frac{H - 10}{1.5} \leq \frac{x - 10}{1.5}\right) = 0.999$$

$$from\ normal\ table$$

$$P(Z \leq 3.09) = 0.999$$

$$\Rightarrow \frac{x - 10}{1.5} = 3.09 \quad \Rightarrow x = 10 + 1.5 \times 3.09 = 14.635\ ft$$

Hence required clearance D = 14.635 ft