Answer on Question #48216 – Math – Statistics and Probability

White Blood Cell (WBC) count per cubic millimeter of whole blood has approximately the normal distribution with mean $\mu = 7500$ and standard deviation of $\sigma = 1750$. The lowest 3% of all WBC counts are defined to probable risks. How low must one's WBC count be to fall in the at-risk group?

Solution

The Z value with 3% is equal 0.03 area left of it is

$$P(z < Z) = 0.03 \to Z = -1.88.$$

So, we need the WBC count that is 1.88 times the standard deviation below (because the Z-score is negative) the mean. The answer is

$$X = \mu + Z\sigma = 7500 \ - \ 1.88 \cdot 1750 \ = \ 4210.$$

Answer: 4210.