Answer on Question#65568 – Math – Statistics and Probability

Question. True or false? Give reason.

If X has the distribution $N(10, 9)$ and if $Y = 5X - 3$, then Y has the distribution $N(53, 84)$.

Solution. Since $E(X) = 10$ by condition then using the properties of mathematical expectation (see https://en.wikipedia.org/wiki/Expected_value#Properties) we get:

$$E(Y) = E(5X - 3) = E(5X) - 3 = 5E(X) - 3 = 5 \cdot 10 - 3 = 47 \neq 53, \qquad \text{and} \qquad \text{original}$$
statement is false.

Answer. False.