Answer on Question#39543 - Math - Algebra

Question: If $\frac{1}{2}$ is a root of the equation $x^2 + kx - \frac{5}{4} = 0$, then the value of k is…

Solution. The statement that $\frac{1}{2}$ is a root of the given equation means that substituting $x = \frac{1}{2}$ into the left-hand side of the equality will make it equal to the right-hand side, i.e. equal to zero:

$$\left(\frac{1}{2}\right)^2 + k \cdot \frac{1}{2} - \frac{5}{4} = 0$$

Multiply this equality by 4:

$$1 + 2k - 5 = 0$$

$$2k = 4$$

$$k = 2$$

Thus, $\frac{1}{2}$ is a root of the given equation if $k = 2$.

Answer. $k = 2$.