Name _____ Date _____

The Fundamental Theorem of Algebra - Guided Lesson Explanation

Explanation # 1

For solving the equation: $64\ x^2 + 9 = 0$

We will move the +9 to the other side:

$64\ x^2 = -9$

$x^2 = -\frac{9}{64}$

$$x = \pm\sqrt{-\frac{9}{64}} = \pm\frac{3}{8}i = \frac{3}{8}i, -\frac{3}{8}i$$

So, the answer is $\frac{3}{8}i, -\frac{3}{8}i$.

Explanation # 2

We should know that if zeros are formed with given conditions, flipping the sign of the zeroes in reference to x will create that condition so that:

$P(x) = (x + 0)\ (x + 10)\ (x - 12)$

We will create polynomial from this P (x).

$P(x) = (x + 0)\ (x + 10)\ (x - 12)$

$P(x) = (x)\ (x + 10)\ (x - 12)$

$P(x) = x\ (x^2 - 2x - 120)$

$P(x) = x^3 - 2x^2 - 120x$

So, the answer is $x^3 - 2x^2 - 120x$.

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Explanation # 3

We can see that there will be 2 roots because $x^2 - 72$ has a degree of 2.

We want it to be equal to zero, so for solving it :

$$x^2 - 72 = 0$$

First we will move the -72 to the other side:

$$x^2 = 72$$

Then we will take the square root of both sides:

$$X = \pm\sqrt{72}$$

$$X = -8.48, +8.48$$

So, the roots are -8.48 and +8.48.