

Problem:

Thu 14 Feb 2019

1) Determine the zeros of

a) $f(x) = 2x^2 + 12x$ Ans: It's asking to solve the equation $f(x) = 0$ for x

in other words FIND x such that $f(x) = 0$

Hence, we need to solve

$$2x^2 + 12x = 0$$

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Using Quadratic Formula: $a=2$ $b=12$ $c=0$

$$X = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Short way:

$$2x^2 + 12x = 0$$

$$x(2x + 12) = 0$$

This has form of

$$A \cdot B = 0$$

only possible if

$$\left. \begin{array}{l} A=0 \\ \text{or } B=0 \end{array} \right\} x=0$$

$$\left. \begin{array}{l} \text{or both} \end{array} \right\} x = \frac{-12}{2} = -6$$

$$X = \frac{-12 \pm \sqrt{12^2 - 4 \cdot 2 \cdot 0}}{2 \cdot 2} = \frac{-12 \pm \sqrt{144 - 0}}{4} = \frac{-12 \pm \sqrt{144}}{4}$$

$$= \frac{-12 \pm 12}{4} = \begin{cases} + \frac{-12 + 12}{4} = \frac{0}{4} = 0 \\ - \frac{-12 - 12}{4} = \frac{-24}{4} = -6 \end{cases}$$

Repeat

$$b) f(x) = -x^2 + 100$$

$$ax^2 + bx + c = 0$$

Ans: Using Quadratic Formula $a = -1$ $b = 0$ $c = 100$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{0 \pm \sqrt{0 - 4(-1)100}}{2(-1)} \rightarrow$$

$$= \frac{\pm \sqrt{400}}{-2} = \frac{\pm 20}{-2} = \begin{cases} + \frac{20}{-2} = -10 \\ - \frac{20}{-2} = 10 \end{cases}$$

HOMEWORK FOR TOMORROW Fri 15 Feb 2019

Find x-intercepts of

a) $f(x) = x^2 - 7x + 12$

b) $f(x) = 2x^2 + 5x - 3$