

Algebra 2 Bellwork Tuesday, November 18, 2014

Find all real and imaginary solutions to each. Simplify your solutions.

1. $5x^2 + 150 = 30$

2. $13 - 7x^2 = 38$

3. $(x + 11)^2 + 73 = 1$

4. $x^2 - 6x + 58 = 0$

5. $-4x^2 + 20x - 37 = 0$

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ANSWERS

Find all real and imaginary solutions to each. Simplify your solutions.

1. $5x^2 + 150 = 30$

$$\begin{array}{r} -150 \quad -150 \\ 5x^2 = \frac{-120}{5} \\ \sqrt{x^2} = \sqrt{-24} \end{array}$$

$$x = \pm i\sqrt{24} \rightarrow \sqrt{4 \cdot 6}$$

$$x = \pm 2i\sqrt{6}$$

2. $13 - 7x^2 = 38$

$$\begin{array}{r} -13 \quad -13 \\ -7x^2 = \frac{25}{-7} \end{array}$$

$$\sqrt{x^2} = \sqrt{-\frac{25}{7}} = \pm \frac{5i}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}}$$

$$x = \pm \frac{5i\sqrt{7}}{7}$$

3. $(x + 11)^2 + 73 = 1$

$$\begin{array}{r} -73 \quad -73 \\ \sqrt{(x+11)^2} = \sqrt{-72} \\ x+11 = \pm \sqrt{-72} = \pm \frac{6i\sqrt{2}}{\sqrt{6 \cdot 2}} \end{array}$$

$$x = -11 \pm 6i\sqrt{2}$$

4. $x^2 - 6x + 58 = 0$

$$b^2 - 4ac = -196$$

$$\frac{6 \pm \sqrt{-196}}{2} = \frac{6 \pm 14i}{2}$$

$$x = 3 \pm 7i$$

5. $-4x^2 + 20x - 37 = 0$

$$b^2 - 4ac = -192$$

$$\frac{-20 \pm \sqrt{-192} \rightarrow 64 \cdot 3}{-8} = \frac{-20 \pm 8i\sqrt{3}}{-8}$$

$$x = \frac{-5 \pm 2i\sqrt{3}}{-2}$$