

Name _____

Date _____

$$13) 4(x-6)^2 + 12 = 112$$

$$4(x-6)^2 = 100$$

$$\sqrt{(x-6)^2} = \sqrt{25}$$

$$x-6 = \pm 5$$

$$x = 11, 1$$

Accelerated Geometry

Partner Exercises 4.1 & 4.2

Solve the following by FACTORING.

$$1) 12x^2 - 25x = -7$$

$$12x^2 - 25x + 7 = 0$$

$$(12x^2 - 21x - 4x + 7)$$

$$3x(4x-7) - 1(4x-7) = 0$$

$$(3x-1)(4x-7) = 0$$

$$x = 1/3, 7/4$$

$$\begin{array}{r} 84 \\ -21 \quad -4 \\ \hline -25 \end{array}$$

$$3) 32x^3 + 2x = 16x^2$$

$$32x^3 - 16x^2 + 2x = 0$$

$$2x(16x^2 - 8x + 1) = 0$$

$$2x(4x-1)^2 = 0$$

$$x = 0, 1/4 \text{ (mult. of 2)}$$

$$2) x^5 = 13x^3 - 36x$$

$$x^5 - 13x^3 + 36x = 0$$

$$x(x^4 - 13x^2 + 36) = 0$$

$$x(x^2 - 4)(x^2 - 9) = 0$$

$$x(x+2)(x-2)(x+3)(x-3) = 0$$

$$x = 0, \pm 2, \pm 3$$

$$4) 5x^4 + 25x^3 = 30x^2$$

$$5x^4 + 25x^3 - 30x^2 = 0$$

$$5x^2(x^2 + 5x - 6) = 0$$

$$5x^2(x+6)(x-1) = 0$$

$$x = 0 \text{ (mult. of 2)}, -6, 1$$

$$5) 4x^2 - 12x + 9 = 0$$

$$(2x-3)^2 = 0$$

$$x = 3/2 \text{ (mult. of 2)}$$

$$14) -5(x^2 + 72) = 40$$

$$x^2 + 72 = -8$$

$$\sqrt{x^2} = \sqrt{-80} < \frac{16}{5} \text{ (4)}$$

$$x = \pm 4i\sqrt{5}$$

$$6) x^5 + 9x^3 - 52x = 0$$

$$x(x^4 + 9x^2 - 52) = 0$$

$$x(x^2 + 13)(x^2 - 4) = 0$$

$$x(x^2 + 13)(x+2)(x-2) = 0$$

$$x = 0, \pm i\sqrt{13}, \pm 2$$

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Write a function in standard form with the given roots.

7) $-3, \frac{7}{4}$

$$(x+3)(4x-7) = 0$$

$$4x^2 - 7x + 12x - 21 = 0$$

$$\boxed{4x^2 + 5x - 21 = 0}$$

8) 0 multiplicity of 2, -8 multiplicity of 2

$$x^2(x+8)(x+8) = 0$$

$$(x^3 + 8x^2)(x+8) = 0$$

$$x^4 + 8x^3 + 8x^3 + 64x^2 = 0$$

$$\boxed{x^4 + 16x^3 + 64x^2 = 0}$$

Solve the following quadratics by COMPLETING THE SQUARE.

9) $x^2 = 8x + 4$

$$x^2 - 8x + 16 = 4 + 16$$

$$\sqrt{(x-4)^2} = \sqrt{20}$$

$$x - 4 = \pm 2\sqrt{5}$$

$$\boxed{x = 4 \pm 2\sqrt{5}}$$

10) $-108 + 2x^2 = -6x$

$$\frac{2x^2 + 6x + \underline{\quad} = 108 + \underline{\quad}}{2}$$

$$x^2 + 3x + \frac{9}{4} = \frac{216}{4} + \frac{9}{4}$$

$$\sqrt{(x + 3/2)^2} = \sqrt{225/4}$$

$$x + \frac{3}{2} = \pm \frac{15}{2} \quad - \frac{3}{2}$$

$$\boxed{x = 6, -9}$$

11) $x^2 + 5x + 16 = 0$ $-64/4$ $25/4$

$$x^2 + 5x + \frac{25}{4} = -16 + \frac{25}{4}$$

$$\sqrt{(x + 5/2)^2} = \sqrt{-39/4}$$

$$x + 5/2 = \pm \frac{i\sqrt{39}}{2}$$

$$\boxed{x = \frac{-5 \pm i\sqrt{39}}{2}}$$

12) $4x^2 + x + 1 = 0$

$$\frac{4x^2 + x + \underline{\quad} = -1 + \underline{\quad}}{4}$$

$$x^2 + 1/4x + \frac{1}{64} = \frac{-16}{64} + \frac{1}{64}$$

$$\sqrt{(x + 1/8)^2} = \sqrt{-15/64}$$

$$x + 1/8 = \pm \frac{i\sqrt{15}}{8}$$

$$\boxed{x = \frac{-1 \pm i\sqrt{15}}{8}}$$