A1 S2 w7d3 9-3 Solving by Unsquaring

1. Skill 12: Simplify Exponential Expressions. Simplify, leaving no negative exponents. Show all steps.

$$\frac{b^4 b^0 \cdot c^{-2}}{(bc)^2}$$

2. Skill 13: Multiplying Polynomials: Use a rectangle to multiply and simplify.

$$(2x^2 + x - 5)(3x - 2)$$

3. Skill 14: Factor a trinomial. Factor completely.

$$6x^3 + 26x^2 - 20x$$

4. Add or subtract, then put answer in standard form.

$$(6x^2 - 2x + 13) - (-7x^2 - 3x + 2)$$

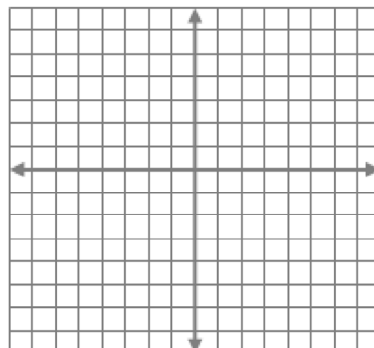5. Skill 15: Factor Special Polynomials. Factor completely.

$$169x^2 - 49$$

6. Find the base of a triangle whose area is 60 cm^2 and has a height of 8 cm.

7. Graph the function. Label the axis of symmetry and the vertex.

$$y = 2x^2 - 6x + 1$$

X	Y

A1 S2 w7d3 9-3 Solving by Unsquaring

Notes 9-3 Solving Quadratic Equations

Key Concept   **Standard Form of a Quadratic Equation**

A **quadratic equation** is an equation that can be written in the form $ax^2 + bx + c = 0$, where $a \neq 0$. This form is called the **standard form of a quadratic equation.**

Essential Understanding   Quadratic equations can be solved by a variety of methods, including graphing and finding square roots.

One way to solve a quadratic equation $ax^2 + bx + c = 0$ is to graph the related quadratic function $y = ax^2 + bx + c$. The solutions of the equation are the x-intercepts of the related function.

To solve
$x^2 - 4 = 0$,
graph $y = x^2 - 4$.

The solutions of
$x^2 - 4 = 0$ are the
x-intercepts 2 and -2.
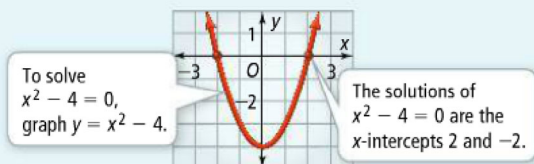
A quadratic equation can have two, one, or no real-number solutions. In a future course you will learn about solutions of quadratic equations that are not real numbers. In this course, *solutions* refers to real-number solutions.
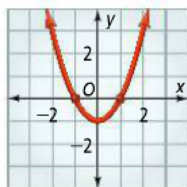
The solutions of a quadratic equation and the x-intercepts of the graph of the related function are often called **roots of the equation** or **zeros of the function.**

Problem 1 Solving by Graphing

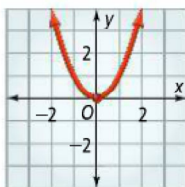**What are the solutions of each equation? Use a graph of the related function.**

A $x^2 - 1 = 0$
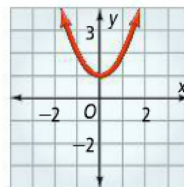
Graph $y = x^2 - 1$.

B $x^2 = 0$

Graph $y = x^2$.

C $x^2 + 1 = 0$

Graph $y = x^2 + 1$.

Problem 2 Solving Using Square Roots

What are the solutions of $3x^2 - 75 = 0$?

Got It?   **2.** What are the solutions of each equation?

  a. $m^2 - 36 = 0$ **b.** $3x^2 + 15 = 0$ **c.** $4d^2 + 16 = 16$
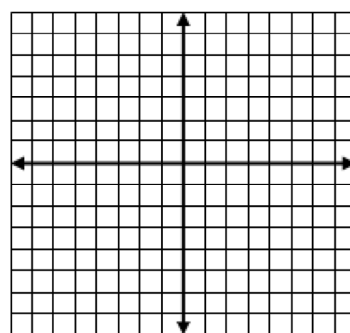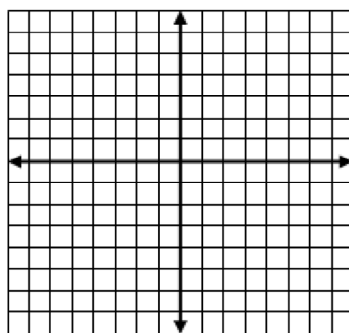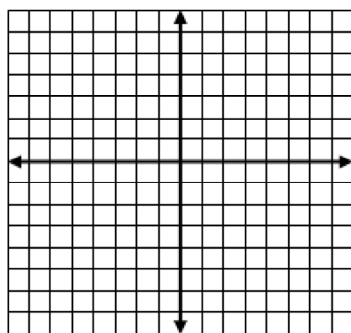
HW p 564: 8, 9, 15, and 21-31 odd

Solve each equation by graphing the related function. If the equation has no real-number solution, write *no solution*.

8. $x^2 - 9 = 0$ **9.** $x^2 + 7 = 0$ **15.** $x^2 + 5 = 5$

Solve each equation by finding square roots. If the equation has no real-number solution, write *no solution*.

20. $n^2 = 81$ **21.** $a^2 = 324$ **22.** $k^2 - 196 = 0$

23. $r^2 + 49 = 49$ **24.** $w^2 - 36 = -64$ **25.** $4g^2 = 25$

26. $64b^2 = 16$ **27.** $5q^2 - 20 = 0$ **28.** $144 - p^2 = 0$

29. $2r^2 - 32 = 0$ **30.** $3a^2 + 12 = 0$ **31.** $5z^2 - 45 = 0$

A1 S2 w7d3 9-3 Solving by Unsquaring

Alg 1 Week 7 block HW   **X-Box #5 Plus Review**
                              Show all work!

Factor completely:

1. $8n^2 - 30n - 50$ **2.** $5x^2 - 18x + 9$ **3.** $-3 - 6x - 3x^2$

4. $6n^2 + 5n - 6$ **5.** $2n^2 - 50$ **6.** $2x^2 + 11x + 5$

7. $2z^3 + 6z^2 + 3z + 9$ **8.** $10g^3 - 25g^2 + 4g - 10$ **9.** $2r^3 + 12r^2 - 5r - 30$

Simplify:

10. $\dfrac{x^3 \cdot x \cdot (2x^{-3})^4}{(3x^2)^3 x^0}$ **11.** $\dfrac{((3xy^7z)^2(2x^2y))^0}{(-3x^2)^3}$

Multiply and simplify:

12. $(3x + 2)(x^2 + 3x - 4)$ **13.** $(3x - 5)(3x + 5)$ **14.** $(x - 4)(5x^2 - 2x + 3)$

Over! ☺

Find the vertex as an ordered pair and state whether it opens up or down.

15. $y = 2x^2 + 4x + 2$ **16.** $y = -x^2 + 6x - 1$ **17.** $y = (x+1)(x-3)$

(hint: multiply it out)

Vertex:_____   Vertex:_____   Vertex:_____

Opens:_____   Opens:_____   Opens:_____