# Announcement:

Chapter 10 Test on Wednesday, 5/30!

# Homework Review - 10.4

(33) $\frac{7(x-3)^2}{7} = \frac{35}{7}$

$\sqrt{(x-3)^2} = \sqrt{5}$

$x - 3 = \pm\sqrt{5}$

$x - 3 = 2.24$ $\quad$ $x - 3 = -2.24$

$+3 \quad +3$ $\quad$ $+3 \quad +3$

$x = 5.24$ or $x = 0.76$

$W = 0.0018 D^2 d_s$

$1 = 0.0018 D^2 (4.5)(2.65)$

$\frac{1}{.02} = \frac{0.02 D^2}{.02}$

$\sqrt{50 = D^2}$ $d = \pm\sqrt{50}$ ; $d = 7$

35 $20 = 2(m+5)^2$

$\frac{20}{2} = \frac{2(m+5)^2}{2}$

$\sqrt{(m+5)^2} = \sqrt{10}$

$m+5 = \pm\sqrt{10}$

$m+5 = 3.16$ or $m+5 = -3.16$

$-5 \quad -5 \qquad -5 \quad -5$

$m = -1.84 \qquad m = -8.16$

(34) $21 = 3(z+14)^2$

$\frac{21}{3} = \frac{3(z+14)^2}{3}$

$\sqrt{(z+14)^2} = 7$

$z+14 = \pm\sqrt{7}$

$z+14 = 2.65$ or $z+14 = -2.65$

$-14 \quad -14 \qquad -14 \quad -14$

$z = -11.35$ or $z = -16.65$

(39) $\frac{2}{3}\cdot\frac{3}{2}(n+1)^2 = 33 \cdot \frac{2}{3}$

$(n+1)^2 = 22$

$\sqrt{(n+1)^2} = \sqrt{22}$

$n+1 = \pm\sqrt{22}$

$n+1 = 4.69$ or $n+1 = -4.69$

$-1 \quad -1 \qquad\qquad -1 \quad -1$

$n = 3.69$ or $n = -5.69$

# Solving Quadratic Equations using the Quadratic Formula

$ax^2 + bx + c = 0$

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

There is a mathematical formula that allows you to compute the solutions to any quadratic equation.

Just plug in a, b, and c

$3x^2 + 5x = 8$

$-8 \quad -8$

$3x^2 + 5x - 8 = 0$

$a = 3 \quad b = 5 \quad c = -8$

$$x = \frac{-5 + \sqrt{5^2 - 4(3)(-8)}}{2(3)} \qquad x = \frac{-5 - \sqrt{5^2 - 4(3)(-8)}}{2(3)}$$

$$x = \frac{-5 + \sqrt{25 + 96}}{6} \qquad x = \frac{-5 - \sqrt{25 + 96}}{6}$$

$$x = \frac{-5 + \sqrt{121}}{6} \qquad x = \frac{-5 - \sqrt{121}}{6}$$

$$x = \frac{-5 + 11}{6} = \frac{+6}{6} = 1 \qquad x = \frac{-5 - 11}{6} = \frac{-16}{6} = \frac{-8}{3}$$

$x = 1$ or $x = \frac{-8}{3}$

$a=1 \quad b=7 \quad c=-80$

**1.** $x^2 + 7x - 80 = 0$

$$x = \frac{-7 + \sqrt{7^2 - 4(1)(-80)}}{2(1)}$$

$$= \frac{-7 + \sqrt{49 + 320}}{2}$$

$$= \frac{-7 + 19.2}{2} = 6.1$$

$$x = \frac{-7 - \sqrt{7^2 - 4(1)(-80)}}{2(1)}$$

$$x = \frac{-7 - \sqrt{49 + 320}}{2}$$

$$x = \frac{-7 - 19.2}{2} = -13.1$$

**2.** $3x^2 - x - 16 = 0$

**9.** $4x^2 - x - 20 = 0$

**10.** $5x^2 + x - 9 = 0$

# When to use different techniques...

Solve by factoring when ...

Solve by graphing when ...

Solve with square roots when ...

Use the quadratic formula when ...

**13.** $6x^2 - 216 = 0$

**14.** $8x^2 = 56$

**15.** $5x^2 - 10x = 0$

**16.** $x^2 + 8x + 7 = 0$

**17.** $x^2 - 6x + 1 = 0$

**18.** $-9x^2 + 10x = 5$

**Pasta** For the period 1990–2003, the amount of biscuits, pasta, and noodles $y$ (in thousands of metric tons) imported into the United States can be modeled by the function $y = 1.36x^2 + 27.8x + 304$ where $x$ is the number of years since 1990.

**a.** Write and solve an equation that you can use to approximate the year in which 500 million pounds of biscuits, pasta, and noodles were imported.

**b.** Write and solve an equation that you can use to approximate the year in which 575 million pounds of biscuits, pasta, and noodles were imported.

**Eggs** For the period 1997–2003, the number of eggs $y$ (in billions) produced in the United States can be modeled by the function $y = -0.27x^2 + 3.3x + 77$ where $x$ is the number of years since 1997.

Write and solve an equation that you can use to approximate the year(s) in which 80 billion eggs were produced.

Homework:

p. 674, 13-22 by 3, 27, 47, 49a