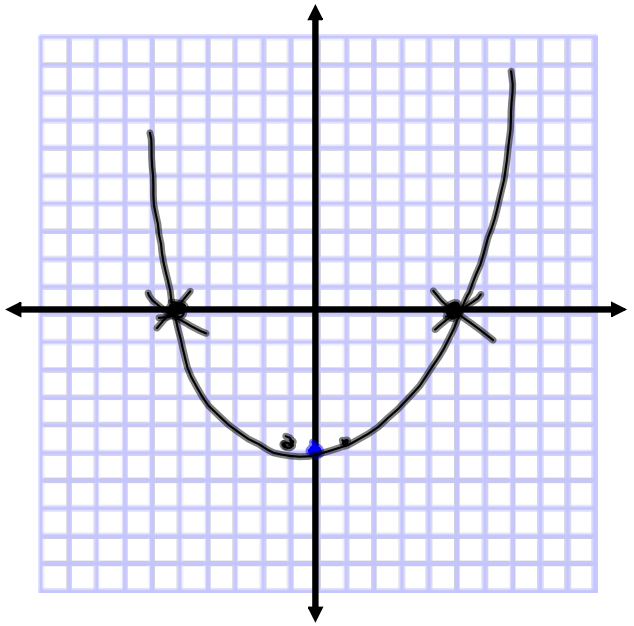
Announcement:

Chapter 10 Test on Tuesday, 1/17! (1st day after long weekend...)

Homework Review - 10.3

(18) $\frac{1}{5}x^2 - 5 = 0$

$y = \frac{1}{5}x^2 - 5$



$a = \frac{1}{5}$ $b = 0$ $c = -5$

$\frac{-b}{2a} = 0$

$(0, -5)$

$x = 5$

$x = -5$

③ $x^2 - 5x + 4 = 0$

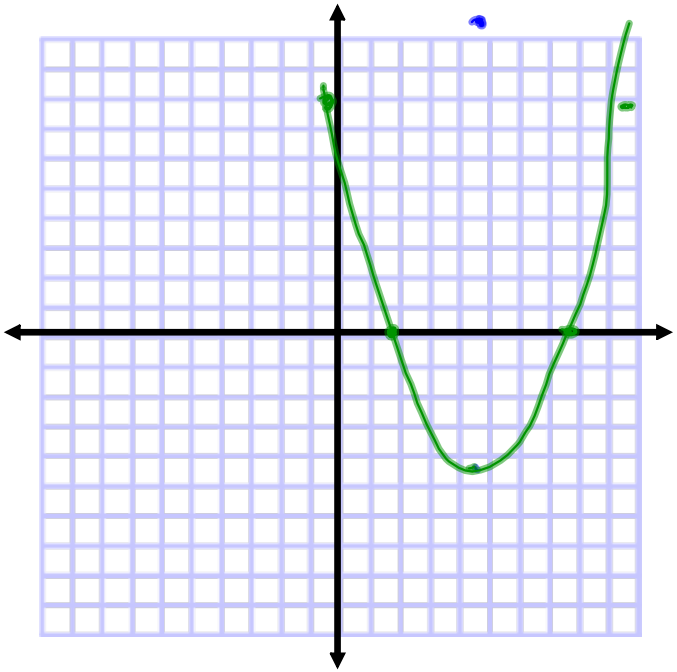
$\frac{+5}{2}$ $\left(\frac{5}{2}, \frac{-9}{4}\right)$

$\left(+\frac{5}{2}\right)^2 - 5\left(\frac{5}{2}\right) + 4$

$\frac{25}{4} - \frac{50}{4} + \frac{16}{4} = \frac{-9}{4}$

$1^2 - 5 + 4 = 0$

$x = 1 \quad x = 4$



53) $y = -.75x^2 + 6x$

$\frac{-6}{2(-.75)} = \frac{6}{1.5} = 4$

16

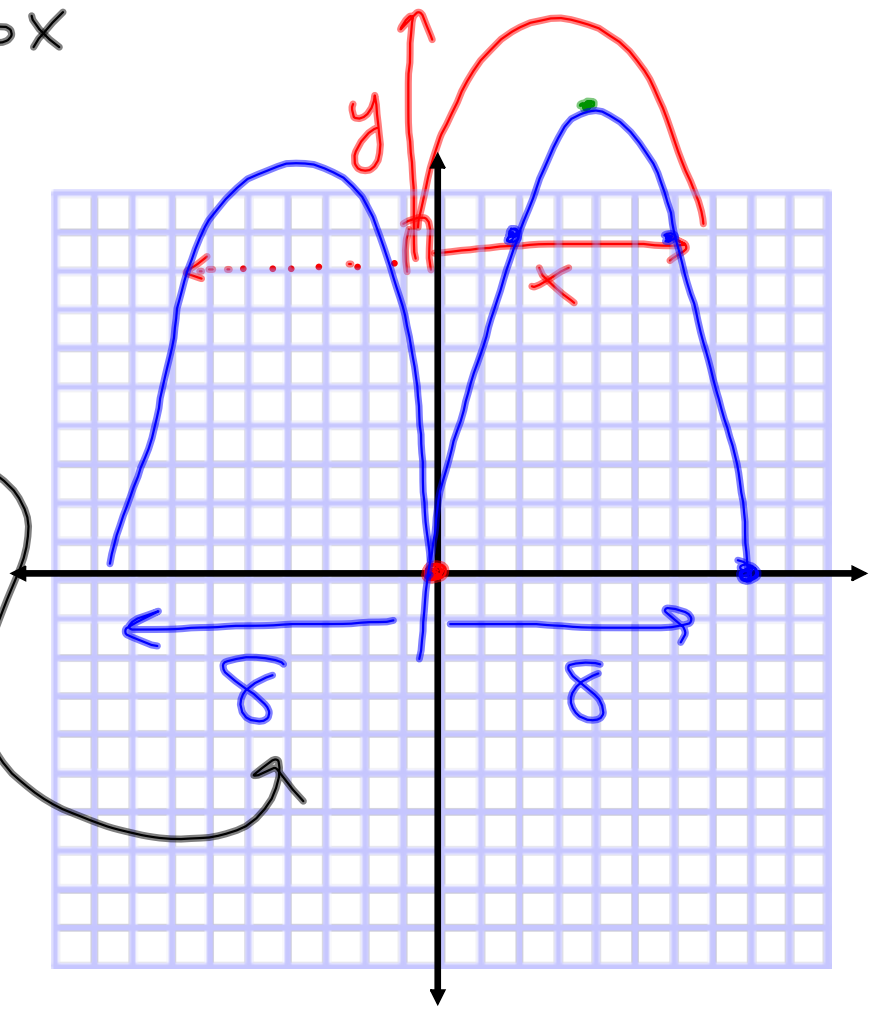
$-.75(16) + 6(4)$

$-12 + 24 = 12$

$(4, 12)$

$-.75(4) + 6(2)$

$-3 + 12 = 9$



Solve a Quadratic using Square Roots

$ax^2 + c = 0$

$2x^2 - 24 = 8$

$+24 \quad +24$

$\frac{2x^2}{2} = \frac{32}{2}$

$x^2 = 16$

$x = \sqrt{16}$ or $x = -\sqrt{16}$

$x = 4$ or $x = -4$

Won't work if b <> 0

Isolate x^2 on one side of the equation

Find the square root of each side (what are the rules of finding square roots?)

$x^2 = d$

$x = \sqrt{d}$ $\quad x = -\sqrt{d}$

$\sqrt{d} > 0$ always

$(-5)^2 = 25$

$5^2 = 25$

$\sqrt{25} = 5$

$\pm\sqrt{25} = 5$ and -5

Look at the equation to determine the number of solutions:

$$x^2 = d$$

two solutions d > 0 (positive)

one solution d = 0

no solutions d < 0 (negative)

$\sqrt{-16}$

$4 \cdot 4 = 16$

$-4 \cdot -4 = 16$

4. $3x^2 - 60 = 87$

$3x^2 = 147$

$x^2 = 49$

$x = \pm\sqrt{49}$

$x = 7, x = -7$

5. $2x^2 - 33 = 17$

$2x^2 = 50$

$x^2 = 25$

$x = 5, x = -5$

6. $5x^2 - 200 = 205$

$5x^2 = 405$

$x^2 = 81$

$x = 9, x = -9$

Decimals? Use a calculator and round

$$x^2 + 15 = 23$$

$x = \sqrt{8}$ $x = -\sqrt{8}$

$x \cong 2.83$

$x \cong -2.83$

16. $48 = 14 + 2x^2$

$2x^2 = 34$

$x^2 = 17$

$x = 4.1 \quad x = -4.1$

17. $8x^2 = 50$

$x^2 = 6.25$

$x = 2.5 \quad x = -2.5$

18. $3x^2 + 23 = 18$

$3x^2 = -5$

$x^2 = \frac{-5}{3}$

No Solution

Flower Seed A manufacturer is making a cylindrical can that will hold and dispense flower seeds through small holes in the top of the can. The manufacturer wants the can to have a volume of 42 cubic inches and be 6 inches tall. What should the diameter of the can be? (*Hint:* Use the formula for volume, $V = \pi r^2 h$, where V is the volume, r is the radius, and h is the height.) Round your answer to the nearest inch.

(diameter = 2 · radius)

$\pi = 3.14$

$V = \pi r^2 h$

$42 = 3.14 r^2 6$

$\frac{42}{18.84} = \frac{18.84 r^2}{18.84}$

$r^2 = 2.23$

$r = 1.49$ $r = -1.49$

$d \approx 3$ in

Stockpile You can find the diameter D (in feet) of a conical pile of sand, dirt, etc. by using the formula $V = 0.2618hD^2$ where h is the height of the pile (in feet) and V is the volume of the pile (in cubic feet). Find the diameter of each stockpile in the table. Round your answers to the nearest foot.

Stockpile	Height (ft)	Diameter (ft)	Volume (ft^3)
A	10	?	68
B	15	?	230
C	20	?	545

Homework:

p. 655, 3-12 by 3, 17-26 by 3, 33-39 odd, 59