# WARM UP – non-calculator #1-3

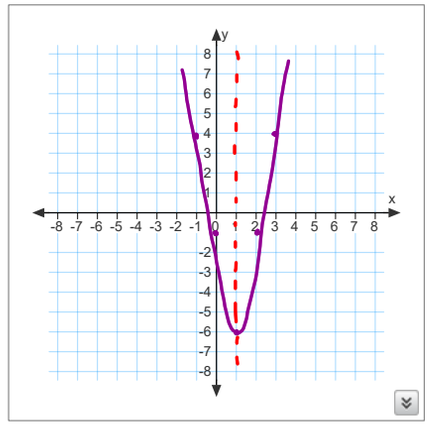
1) Multiply: (2x - 5)(x + 3) $2x^2+x-15$

2) What two numbers have a product of -24 and a sum of -5? $-8, 3$

3) What two numbers have a product of -42 and a sum of 1? $7, -6$

**4) You may use your calculator to answer:**

What is the lowest point (*vertex*) of $y = 5x^2 - 10x - 1$




$(1, -6)$

$x = 1$

$t + \frac{1}{2}t^2 + t^2 + 1$

$t + \frac{1}{2}t^2 + t^2 + 1$

$1.5t^2 + t + 1$

5) Then get out your HW, WB pg 31

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# Check HW - WB pg 31

1) 7x

2) $x^2 + 2x - 35$

3) -8x + 18

4) $-3x^2 + 2x$

5) $18x^2$

6) $13x^2 + 5x$

7) -6x + 6

8) 4x - 20 x + 25

9) $1.5t^2 + 2t$

10) -x - 5

11) $-8x^2$

12) $5x^2 + 18x$

13) -25, -1, 0, -9

14) 21, 1, 1, 13

15) 6, 6/5, 1, 14/5

16) 58, 6, 3, 18

17) -15, 1, 0, -15

18) 142, 14, 2, 14

19) (1, -4)

20) (-2, 5)

21) x = -2

22) (7,0) (-2,0)

23) same

24) (-8,0) (1,0)

25) same

Sep 27-5:06 PM

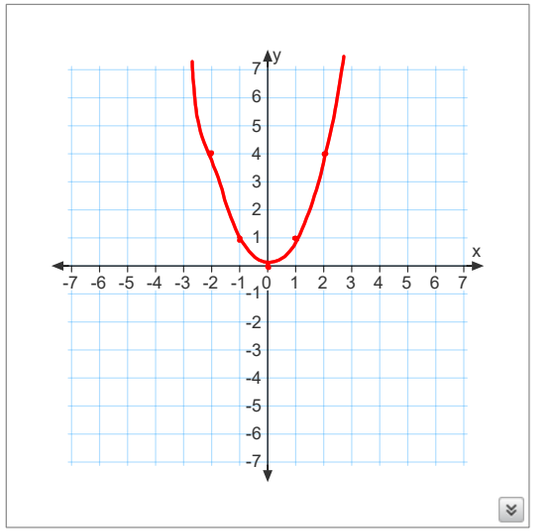
# 5.1 Quadratic Equations and Functions

## Standard Form of Quadratic Function

$f(x) = ax^2 + bx + c$ (when $a \neq 0$)

→ **Parent Function $f(x) = x^2$**

Graph is a **parabola**

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# Where do we see parabolas in the real world?


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# Classifying Functions

Determine whether each function is quadratic, linear or constant. Identify the value of *a, b, c* in each problem.

**1) $y = (2x - 5)(x + 3)$**

$= 2x^2 + x - 15$ quadratic

quad : $x^2$
linear : $x$
constant : $y = c$ horizontal line

**2) $y = 6(x^2 - 4x) - 2(3x^2 + 7x)$**

$6x^2 - 24x - 6x^2 - 14x$

$-38x = y$

linear

**3) $f(x) = x^2 - (x + 1)(x - 1)$**

$x^2 - (x^2 - x + x - 1)$

$x^2 - x^2 + x - x + 1$

$y = 1$

constant

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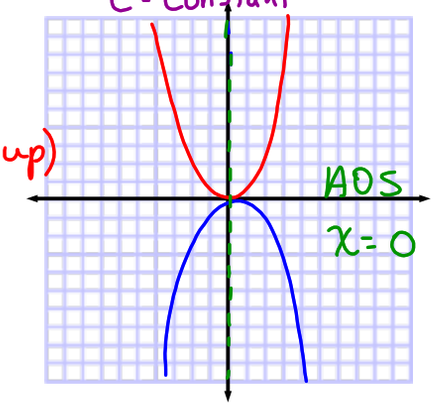
# Vocabulary

$f(x) = ax^2 + bx + c$

a = quad coefficient
b = linear coefficient
c = constant

**Vertex**
Minimum point
(when a > 0) (opens up)
or
Maximum point
(when a < 0)




**Axis of Symmetry** is the line that divides a parabola into two parts that are mirror images.

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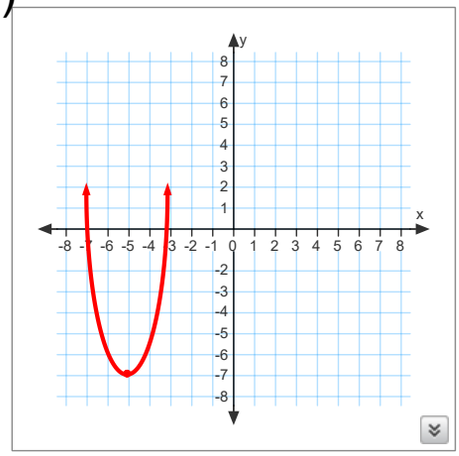
# Examples

Identify the vertex and axis of symmetry of each graph.

4)

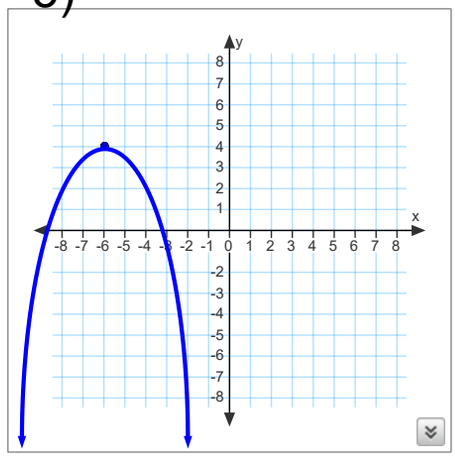


Vertex ( -5 , -7 ) min

Axis of Symmetry

X = -5

5)



Vertex ( -6 , 4 ) max

Axis of Symmetry

X = -6

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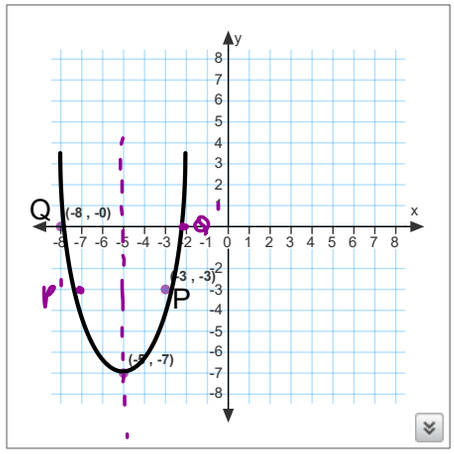


For the parabola to the ~~right~~ left, find corresponding points P' and Q' for the points P and Q. ↳P prime

V (-5, -7)

P (-3, -3) P' is (-7, -3)

Q (-8, 0) Q' is (-2, 0)

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# ACT
# PRACTICE PROBLEMS

6. For the function $h(x) = 4x^2 - 5x$, what is the value of $h(-3)$?

A. -93
B. -9
C. 21
D. 51
E. 159

ACT-59F #19

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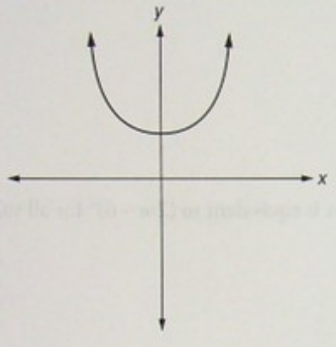
7)

If $f(x)$ is graphed in the following figure, then which of the following is a possible formula for $f(x)$?




(A) $x^2$
(B) $(x-4)^2$
(C) $(x+3)^2$
(D) $x^2-2$
(E) $x^2+4$

ACT Practice #437

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8)

Which of the following expressions is equivalent to $(2m-6)^2$ for all values of $m$?

(A) $4m^2-12$

(B) $4m^2-24$

(C) $4m^2+36$

(D) $4m^2-24m+36$

(E) $4m^2-12m+36$

$(2m-6)(2m-6)$

$4m^2-12m-12m+36$

ACT Practice #441

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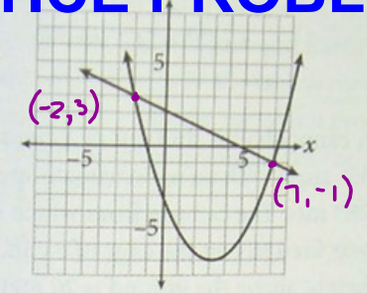
# SAT PRACTICE PROBLEM

9)




2. If $(x_1, y_1)$ and $(x_2, y_2)$ are solutions to the system of equations shown on the graph, what is the value of $x_1 + x_2$?

A) $-3$

B) $0$

C) $2$

D) $5$

Sep 29-8:16 AM

GO COUGARS!

# HW 5.1

**p. 241 #1-9 Identify a,b,c, 10-15**
**#44, 46, 47**

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Oct 7-10:15 AM

9)

What is the largest value of $x$ that makes the equation $x^2 + 2x - 35 = 0$ true?

(A) 5
(B) 7
(C) 12
(D) 33
(E) 35

ACT Practice #445

Sep 29-11:48 AM