

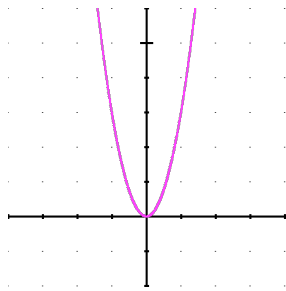
**Algebra 12**  
**Review Chapter 10**

Make sure you know how to do EVERY single problem before you walk into class on Wednesday!

Find the following for each equation below:

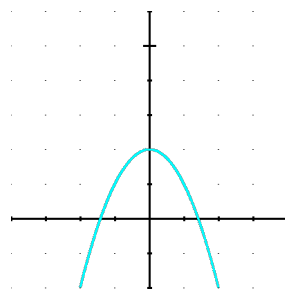
- a) Vertex
- b) Is the graph **narrower/wider** than the parent function  $y = x^2$ ?
- c) Does the graph open **up/ down**
- d) Equation of axis of symmetry:
- e) Max/Min value
- f) y-intercept
- g) x-intercept (s):
- h) graph

1)  $y = 3x^2$



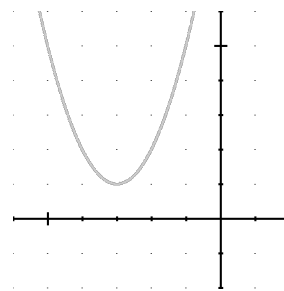
- (a) (0, 0)
- (b) narrower (taller)
- (c) up
- (d)  $x = 0$
- (e) Min: 0
- (f) (0, 0)
- (g) 0

2)  $y = -x^2 + 2$



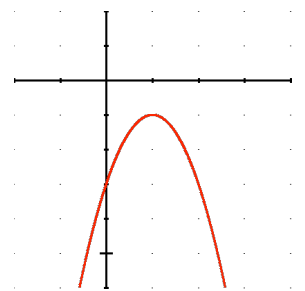
- a) (0, 2)
- b) The same
- c) down
- d)  $x = 0$
- e) Max: 2
- f) (0, 2)
- g)  $\pm 1.41$  (zero finder)

3)  $y = x^2 + 6x + 10$



- a) (-3, 1)
- b) The same
- c) up
- d)  $x = -2$
- e) Min: 1
- f) (0, 10)
- g) None

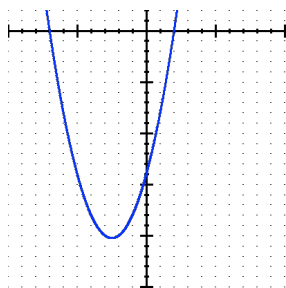
4)  $y = -2x^2 + 4x - 3$



- a) (1, -1)
- b) narrower
- c) down
- d)  $x = 1$
- e) Max: -1
- f) (0, -3)
- g) None

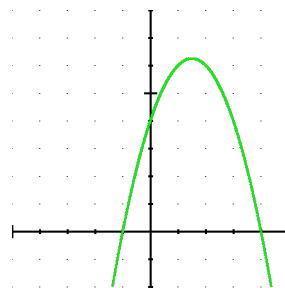
**Solve the following by graphing. Show a sketch.**

5)  $x^2 + 5x - 14 = 0$



$x = 2, -7$

6)  $-x^2 + 3x + 4 = 0$



$x = -1, 4$

Use the quadratic formula to solve the equation. Round to the nearest hundredth.

7)  $6q^2 + 4q = 5q - 2$

$$6q^2 - q + 2 = 0$$

$$q = \frac{1 \pm \sqrt{(-1)^2 - 4(6)(2)}}{2(6)}$$

$$q = \frac{1 \pm \sqrt{-47}}{12}$$

No Solutions

8)  $4d + 2 = (d - 1)(d + 3)$

$$4d + 2 = d^2 + 3d - 1d - 3$$

$$0 = d^2 - 2d - 5$$

$$d = \frac{2 \pm \sqrt{(-2)^2 - 4(1)(-5)}}{2(1)}$$

$$d = \frac{2 \pm \sqrt{24}}{2} \approx 3.45, -1.45$$

Solve the following by any method (must have exact answers!)

9)  $p^2 + 8p - 15 = 0$

Only Quad Formula Works!

$$p = -4 \pm \sqrt{31}$$

10)  $2y^2 - 7y = 10$

Only Quad Formula Works!

$$y = \frac{7 \pm \sqrt{129}}{4}$$

11)  $9z^2 + 12z + 4 = 0$

Factoring or Quad Formula

$$z = -\frac{2}{3}$$

12)  $16t^2 - 9 = 0$

Quad Formula, Factoring,  
or Undo Works

$$t = \pm \frac{3}{4}$$

13)  $2(x - 6)^2 = 24$

Quad Formula or  
Undo Works

$$x = 6 \pm 2\sqrt{3}$$

14)  $4n^2 - 13 = -20$

Quad Formula or Graphing

No Solutions

15)  $6q^2 + 4q = 5q - 2$

Quad Formula or Graphing

No Solutions

16)  $4d + 2 = (d - 1)(d + 3)$

Quad Formula Only!

$$d = 1 \pm \sqrt{6}$$

17)  $a^2 = 28$

Quad Formula or Undo Works

$$a = \pm 2\sqrt{7}$$

18)  $2w^2 - 72 = 0$

Quad Formula, Factoring,  
Graphing, or Undo

$$w = \pm 6$$

19)  $(t + 5)^2 = 4$

Quad Formula, Undo  
Factoring, or Graphing

$$w = -7, -3$$

- 20) For the period 1990–2001, the number of tickets sold (in millions) for Broadway road tours can be modeled by the function  $y = -10.4x^2 + 132x + 332$  where  $x$  is the number of years since 1990. In what year was 750 million tickets sold for Broadway road tours?

$$750 = -10.4x^2 + 132x + 332$$

$$0 = -10.4x^2 + 132x - 418$$

$x = 6.06, 6.63$  (zero finder or quadratic formula).

750 million tickers were sold twice in the year 1996.

**Tell where the equation has two solutions, one solution, or no solutions.**

21)  $3r^2 - r + 2 = 0$

$$d = (-1)^2 - 4(3)(2)$$

$$d = -23$$

No Solutions

22)  $5c^2 - 2c - 8 = 0$

$$d = (-2)^2 - 4(5)(-8)$$

$$d = 164$$

2 Solutions

23)  $3z^2 + 6z = -3$

$$3z^2 + 6z + 3 = 0$$

$$d = (6)^2 - 4(3)(3)$$

$$d = 0$$

1 Solution

**Factor the following:**

24)  $x^2 + 8x + 7$

$$(x + 7)(x + 1)$$

25)  $b^2 - 7b + 10$

$$(b - 5)(b - 2)$$

26)  $w^2 - 12w - 13$

$$(w - 13)(w + 1)$$

27)  $p^2 + 10p + 25$

$$(p + 5)^2$$

28)  $m^2 - 10m + 24$

$$(m - 6)(m - 4)$$

29)  $y^2 - 5y - 24$

$$(y - 8)(y + 3)$$

30)  $2y^2 + 15y + 7$

$$(2y + 1)(y + 7)$$

31)  $3a^2 - 13a + 4$

$$(3a - 1)(a - 4)$$

32)  $5d^2 - 18d - 8$

$$(5d + 2)(d - 4)$$

33)  $36m^2 - 81$

$$(6m - 9)(6m + 9)$$

34)  $9c^2 + 24c + 16$

$$(3c + 4)^2$$

35)  $12r^2 + 4r$

$$4r(3r + 1)$$

**Solve by factoring:**

36)  $x^2 + 14x + 49 = 0$

$(x + 7)^2 = 0$

$x = -7$

37)  $3m^2 + 30m + 75 = 0$

$3(m^2 + 10m + 25) = 0$

$3(m + 5)^2 = 0$

$m = -5$

38)  $n^2 - 10n + 24 = 0$

$(n - 4)(n - 6) = 0$

$n = 4, 6$

39)  $35k^2 - 22k + 7 = 4$

$35k^2 - 22k + 3 = 0$

$(7k - 3)(5k - 1) = 0$

$k = \frac{3}{7}, \frac{1}{5}$

40)  $6x^2 = 14x$

$6x^2 - 14x = 0$

$2x(3x - 7) = 0$

$x = 0, \frac{7}{3}$

**Solve by Undo:**

41)  $m^2 + 7 = 88$

$m^2 = 81$

$m = \pm 9$

42)  $10n^2 - 10 = 470$

$10n^2 = 480$

$n^2 = 48$

$n = \pm\sqrt{48}$

$n = \pm 4\sqrt{3}$

43)  $4(r + 1)^2 + 3 = 39$

$4(r + 1)^2 = 36$

$(r + 1)^2 = 9$

$r + 1 = \pm 3$

$r = -1 \pm 3$

$r = 2, -4$