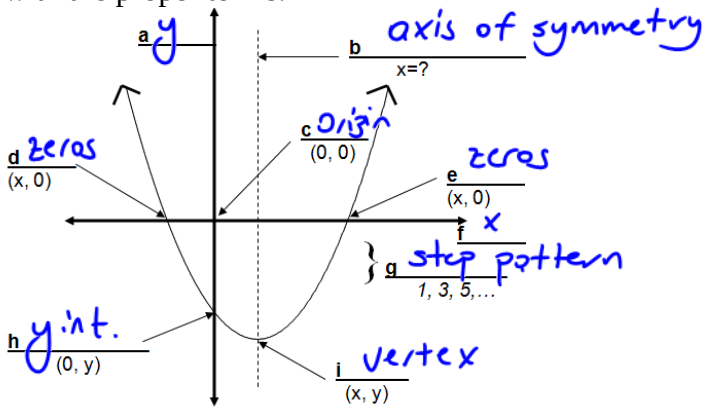
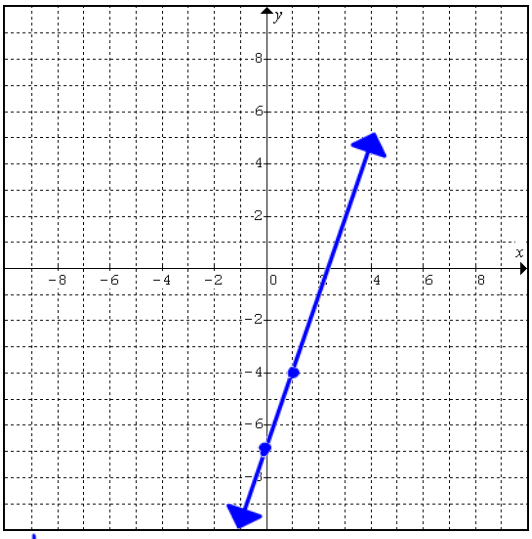
1. Please fill in the blank below with the proper terms.



2. Use each equation to complete the table of values and then plot the points on the grid provided. Please also state which type of relationship (i.e. Linear, Quadratic, Neither) each one is and state 3 ways you know.

a. $y = 3x - 7$

x	y	first diff.	second diff.
-3	-16	3	0
-2	-13	3	0
-1	-10	3	0
0	-7	3	0
1	-4	3	0
2	-1	3	0
3	2	2-(-1)=3	



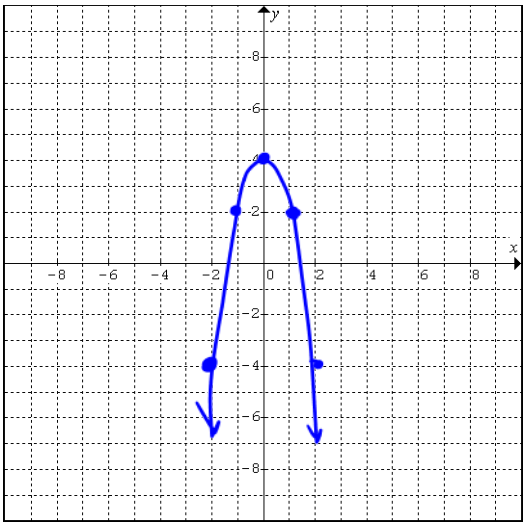
Type of Relation? LINEAR

How do you know? (There are 3 ways to tell)

① 1st diff. are equal
② 1st degree equation ($y = mx + b$)
③ Straight line

b. $y = -2x^2 + 4$

x	y	first diff.	second diff.
-3	-14	10	-4
-2	-4	6	-4
-1	2	2	-4
0	4	-2	-4
1	2	-6	-4
2	-4	-10	-4
3	-14		



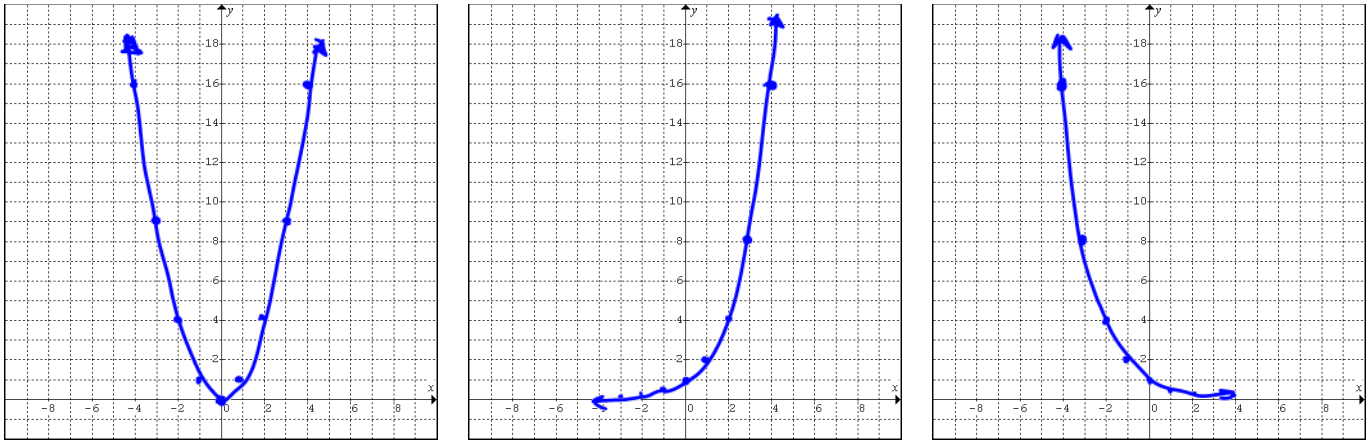
Type of Relation? QUADRATIC

How do you know? (There are 3 ways to tell)

- 2nd differences EQUAL
- Equation is 2nd degree
- Graph is a curve

3. Graph each of the following:

$y = x^2$ $y = 2^x$ $y = \left(\frac{1}{2}\right)^x$



4. Please evaluate the following powers. NO DECIMALS. Leave your answers as integers or fractions.

a) 3^{-5} $= \frac{1}{3^5} = 1/243$

b) 2^{-3} $= \frac{1}{2^3} = 1/8$

c) 4^{-3} $= \frac{1}{4^3} = 1/64$

d) $(-5)^{-4}$ $= \frac{1}{(-5)^4} = 1/625$

e) 10^0 $= 1$

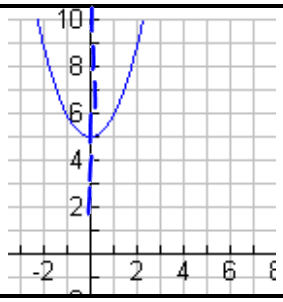
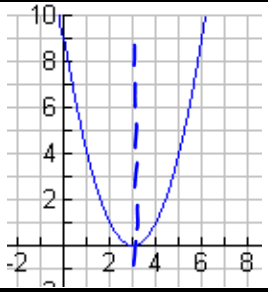
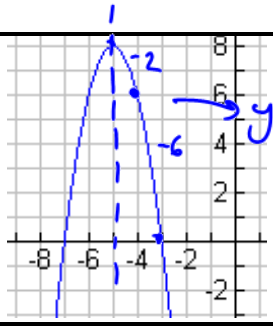
f) $(-2)^{-8}$ $= \frac{1}{(-2)^8} = 1/256$

g) $\left(\frac{1}{6}\right)^{-3} = (6)^3 = 216$

h) $\left(\frac{1}{10}\right)^{-5} = \left(\frac{10}{1}\right)^5 = 100{,}000$

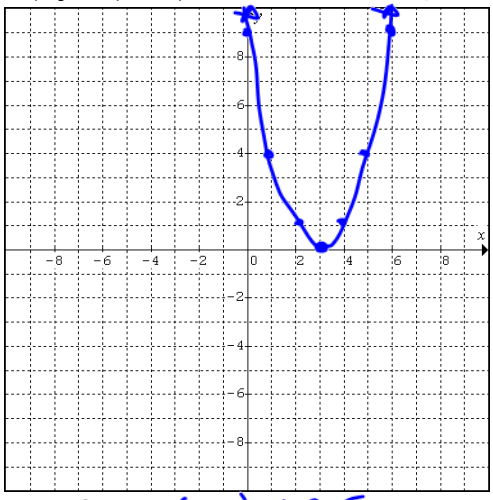
i) $\left(\frac{5}{4}\right)^{-2} = \left(\frac{4}{5}\right)^2 = \frac{4^2}{5^2} = \frac{16}{25}$

5. Please complete the chart below:

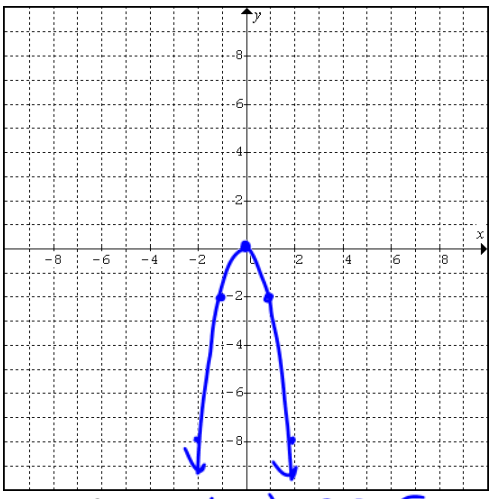
Parabola Graph			 $y=-2(x+5)^2+8$ $=-2(0+5)^2+8$ $=-42$
Vertex	(0,5)	(3,0)	(-5,8)
Is there a Max or a Min?	min	min	max
State the Max or Min value	min = 5	min = 0	max = 8
Equation of Axis of Symmetry (and draw it on the graph)	x = 0	x = 3	x = -5
Zeros if possible	n/a	(3,0)	(-7,0) (-3,0)
Direction of Opening	UP	UP	Down
y – intercept	(0,5)	(0,9)	can't tell from the graph (0,-42)

6. Please graph the following.

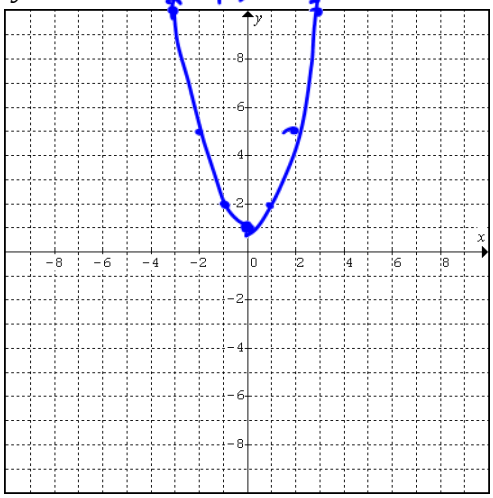
a) $y = (x-3)^2$ V(3,0) Steps = 1, 3, 5



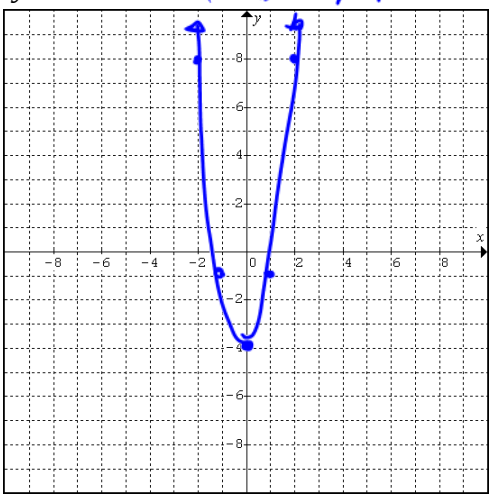
b) $y = -2x^2$ (0,0) Steps = -2, -6, -10



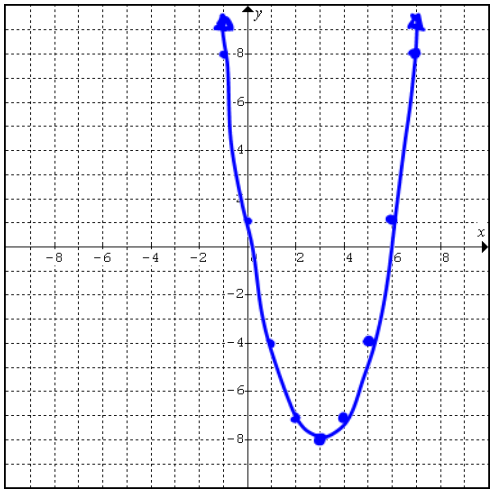
c) $y = x^2 + 1$ (0,1) 1, 3, 5



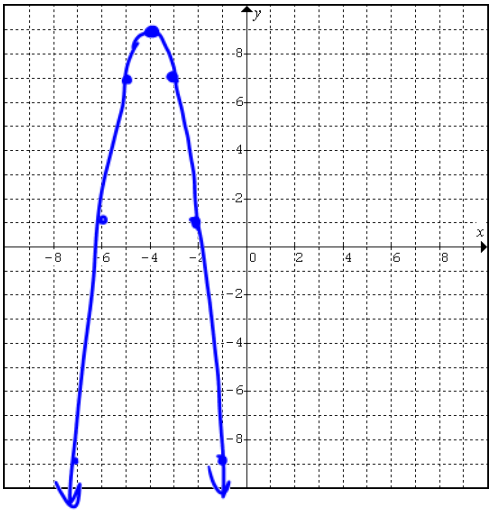
d) $y = 3x^2 - 4$ (0,-4) 3, 9, 15



e) $y = (x-3)^2 - 8$ (3,-8) 1, 3, 5, 7

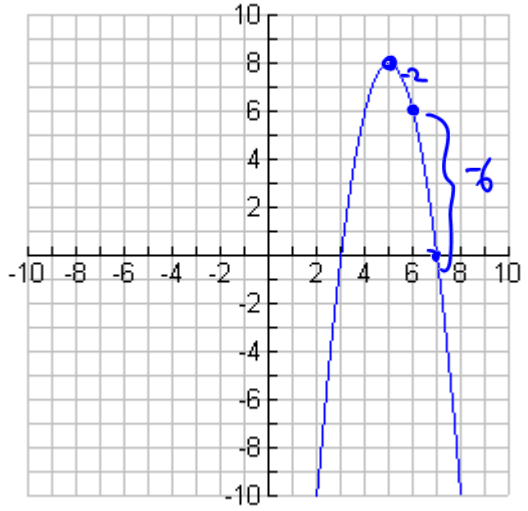


f) $y = -2(x+4)^2 + 9$ (-4,9) -2, -6, -10



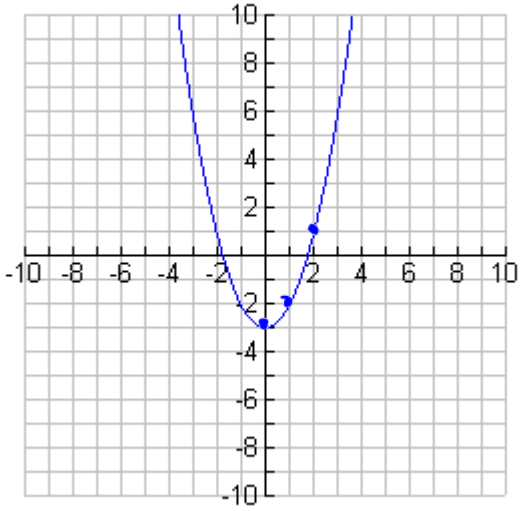
Please determine the equation of each parabola.

a)



Equation: $y = -2(x-5)^2 + 8$

b)



Equation: $y = (x)^2 - 3$

c) Vertex (3, 5) and it goes through the point (8,-3)

$y = a(x-h)^2 + k$

$-3 = a(8-3)^2 + 5$

$-3-5 = 25a$

$-8 = 25a$

$a = -8/25$

Equation: $y = \frac{-8}{25}(x-3)^2 + 5$

d) Vertex (-1, 7) and it goes through the point (4,-2)

$y = a(x-h)^2 + k$

$-2 = a(4-(-1))^2 + 7$

$-9 = 25a$

$a = -9/25$

Equation: $y = \frac{-9}{25}(x+1)^2 + 7$

d) Vertex (5, 0) and it goes through the point (3,-12)

$y = a(x-h)^2 + k$

$-12 = a(3-5)^2 + 0$

$-12 = 4a$

$a = -3$

Equation: $y = -3(x-5)^2$