Algebra 1 Name Key

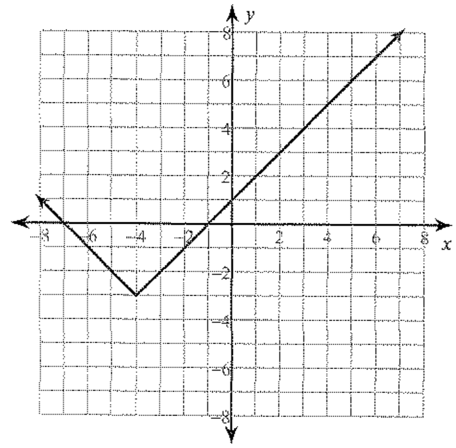
Identify, Graph, and Transform Quadratics Review

Determine if each problem is a quadratic. If not, identify which type of function it represents.

1) $3x^2 + 4x = 5 + y$

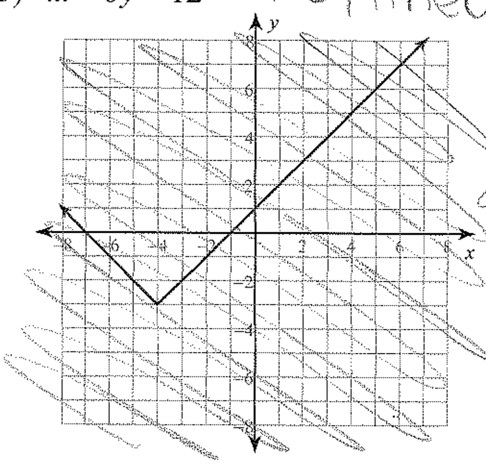
yes, quadratic

2)



no, absolute value

3) $4x - 6y = 12$ no, linear



graph should not be here :)

4) $f(x) = x^3 + 2x^2 - x + 7$

no, cubic

5)

x	y
−2	5
−1	9
0	13
1	17
2	21

+1; +4, +4, +4, +4

no, linear

6)

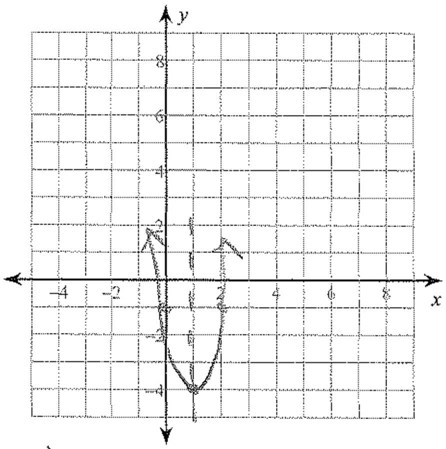
x	y
−2	−8
−1	−2
0	0
1	−2
2	−8

+1; +6, +2, −2, −6; −4, −4, −4

yes, quadratic

For each function, a) determine if the graph opens up or down, b) find the vertex, c) find the y-intercept, d) find the minimum or maximum value, e) find the domain and range and f) graph the function.

7) $y = 3x^2 - 6x - 1$



a) up

b) $\frac{-(-6)}{2(3)} = \frac{6}{6} = 1$ $\boxed{(1,-4)}$

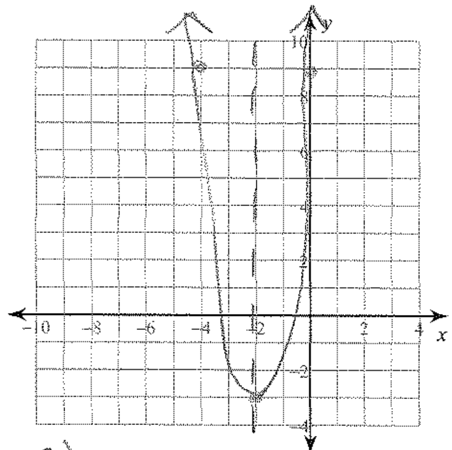
$3(1)^2 - 6(1) - 1 = -4$

c) y-int = -1

d) min = -4

e) D: $x \in \mathbb{R}$, R: $y \geq -4$

8) $y = 3x^2 + 12x + 9$



a) up

b) $\frac{-12}{2(3)} = \frac{-12}{6} = -2$ $\boxed{(-2,-3)}$

$3(-2)^2 + 12(-2) + 9 = -3$

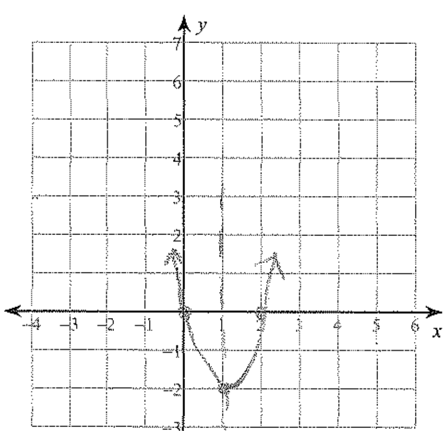
c) y-int = 9

d) min = -3

e) D: $x \in \mathbb{R}$

R: $y \geq -3$

9) $f(x) = 2x^2 - 4x$



a) up

b) $\frac{-(-4)}{2(2)} = \frac{4}{4} = 1$ $\boxed{(1,-2)}$

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

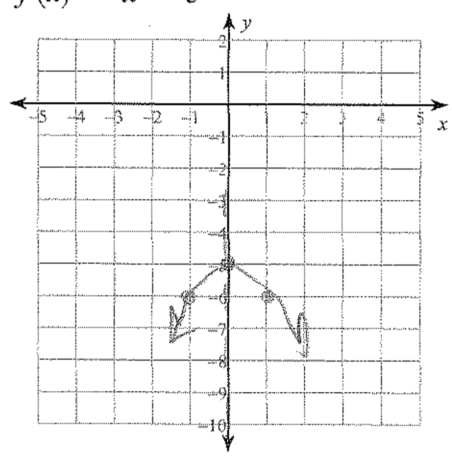
c) y-int = 0

d) min = -2

e) D: $x \in \mathbb{R}$

R: $y \geq -2$

10) $f(x) = -x^2 - 5$



a) down

b) $\frac{-0}{2(-1)} = 0$ $\boxed{(0,-5)}$

$-(0)^2 - 5 = -5$

c) y-int = -5

d) max = -5

e) D: $x \in \mathbb{R}$

R: $y \leq -5$

x	y	(x, y)
1	$-(1)^2 - 5$	(1, −6)

Describe each transformation.

11) $y = 3(x-5)^2 + 2$

(narrow)
Open up, stretched by 3, vertex @ (5,2)

12) $f(x) = -\frac{1}{2}(x+6)^2 - 4$

(wide)
Open down, compressed by $\frac{1}{2}$, vertex @ (-6,-4)

13) $f(x) = (x-1)^2$

Open up, normal vertex @ (1,0)

14) $f(x) = -4(x+2)^2 - 8$

(narrow)
Open down, stretched by 4, vertex @ (-2,-8)

Write an equation to represent the transformation.

15) opening down, narrow, vertex at $(4, 7)$

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

16) opening up, normal, shifted left 2 and down 9

$y = (x+2)^2 - 9$

17) opening up, compressed by a factor of $\frac{1}{3}$, shifted right 3 and up 6

$y = \frac{1}{3}(x-3)^2 + 6$

18) opening down, stretched by a factor of 8, vertex at $(0, -1)$

$y = -8(x-0)^2 - 1$