Algebra 2

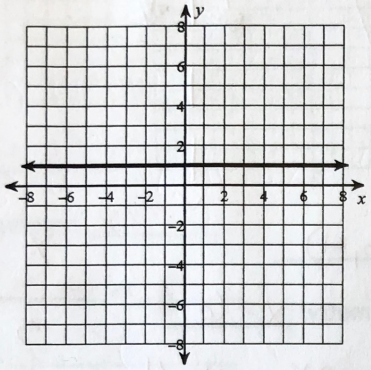
Name KEY

Unit 1 Review

For each graph below, give the parent function name and equation.

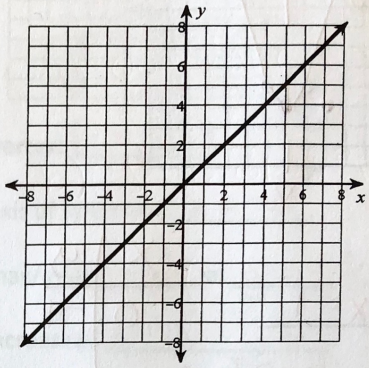
1) name: CONSTANT

equation: $f(x) = 1$



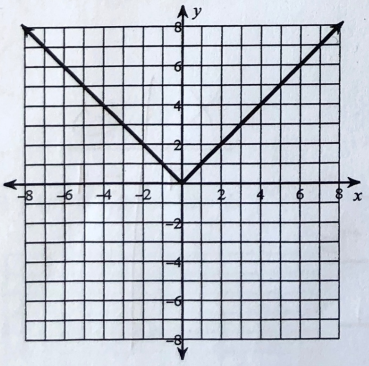
2) name: LINEAR

equation: $f(x) = x$



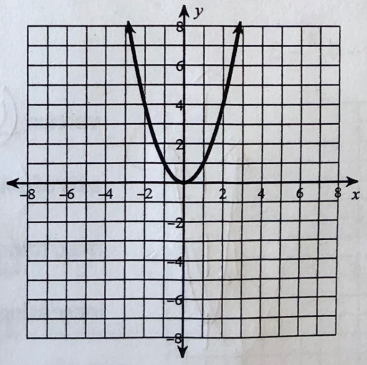
3) name: ABSOLUTE VALUE

equation: $f(x) = |x|$

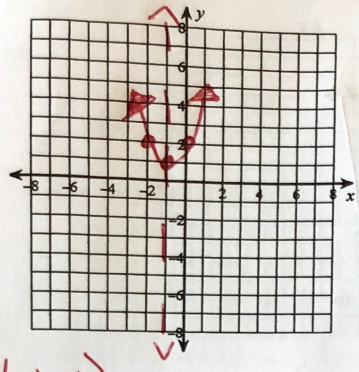


4) name: QUADRATIC

equation: $f(x) = x^2$



8) $f(x) = x^2 + 2x + 2$ (y-INT)



vertex: (-1, 1)

axis of symmetry: $x = -1$

max/min: MIN at $y = 1$

increasing: $x > -1$

decreasing: $x < -1$

$a=1 \quad b=2 \quad c=2$

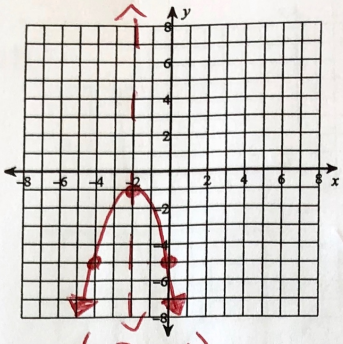
$x = \frac{-b}{2a} = \frac{-2}{2(1)} = \frac{-2}{2} = -1$

$y = (-1)^2 + 2(-1) + 2$

$= 1 - 2 + 2$

$= 1$

9) $f(x) = -x^2 - 4x - 5$ (y-INT)



vertex: (-2, -1)

axis of symmetry: $x = -2$

max/min: MAX at $y = -1$

increasing: $x < -2$

decreasing: $x > -2$

$a=-1 \quad b=-4 \quad c=-5$

$x = \frac{-(-4)}{2(-1)} = \frac{4}{-2} = -2$

$y = -(-2)^2 - 4(-2) - 5$

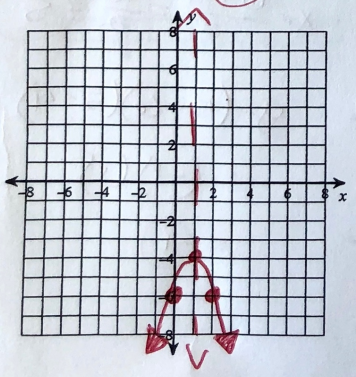
$= -(4) + 8 - 5$

$= -4 + 8 - 5$

$= 4 - 5$

$= -1$

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



vertex: (1, -4)

axis of symmetry: $x = 1$

max/min: MAX at $y = -4$

increasing: $x < 1$

decreasing: $x > 1$

$a=-2 \quad b=4 \quad c=-6$

$x = \frac{-b}{2a} = \frac{-4}{2(-2)} = \frac{-4}{-4} = 1$

$y = -2(1)^2 + 4(1) - 6$

$= -2(1) + 4 - 6$

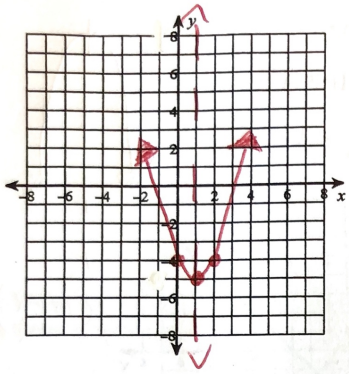
$= -2 + 4 - 6$

$= 2 - 6$

$= -4$

Identify the properties of each parabola. Then sketch the graph.

5) $f(x) = (x-1)^2 - 5$



vertex: (1, -5)

axis of symmetry: x = 1

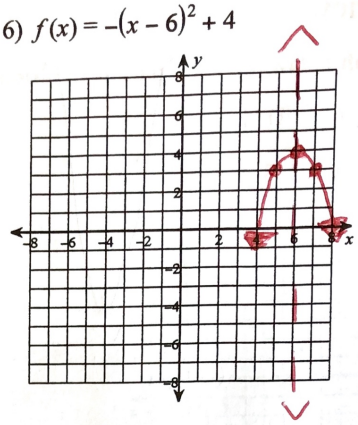
max/min: MIN at y = -5

increasing: x > 1

decreasing: x < 1

x	y
0	-4

6) $f(x) = -(x-6)^2 + 4$



vertex: (6, 4)

axis of symmetry: x = 6

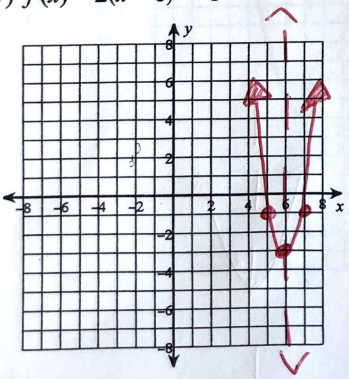
max/min: MAX at y = 4

increasing: x < 6

decreasing: x > 6

x	y
5	3

7) $f(x) = 2(x-6)^2 - 3$



vertex: (6, -3)

axis of symmetry: x = 6

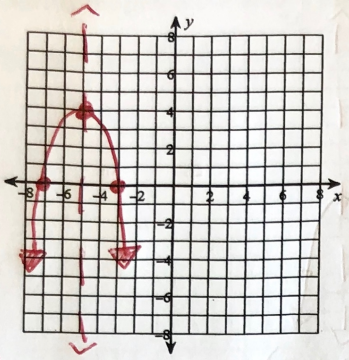
max/min: MIN at y = -3

increasing: x > 6

decreasing: x < 6

x	y
7	-1

11) $f(x) = -(x+7)(x+3)$



vertex: (-5, 4)

axis of symmetry: $x = -5$

max/min: MAX at $y = 4$

increasing: $x < -5$

decreasing: $x > -5$

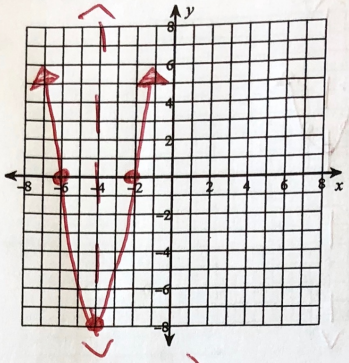
$x = \frac{-7+-3}{2} = \frac{-10}{2} = -5$

$y = -(-5+7)(-5+3)$

$= -(2)(-2)$

$= 4$

12) $f(x) = 2(x+6)(x+2)$



vertex: (-4, -8)

axis of symmetry: $x = -4$

max/min: MIN at $y = -8$

increasing: $x > -4$

decreasing: $x < -4$

$x = \frac{-6+-2}{2} = \frac{-8}{2} = -4$

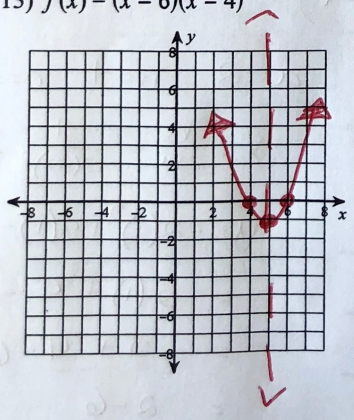
$y = 2(-4+6)(-4+2)$

$= 2(2)(-2)$

$= 4(-2)$

$= -8$

13) $f(x) = (x-6)(x-4)$



vertex: (5, -1)

axis of symmetry: $x = 5$

max/min: MIN at $y = -1$

increasing: $x > 5$

decreasing: $x < 5$

$x = \frac{6+4}{2} = \frac{10}{2} = 5$

$y = (5-6)(5-4)$

$= (-1)(1)$

$= -1$