

10.1 Intro to Quadratics

PRACTICE

Directions: Fill in the empty boxes. Place info on graph and sketch graph.

1) Equation in Standard Form:	$F(x) = x^2 + 2x - 3$		
Equation in Factored Form:	$f(x) = (x+3)(x-1)$		
x-intercepts:	$(-3, 0) (1, 0)$		
y-intercept:	$(0, -3)$		
Point symmetric to y-intercept:	$(-2, -3)$		
Leading Coefficient:	1		
Axis of Symmetry:	$X = -1$	Vertex represents a Minimum or Maximum:	MINIMUM
Parabola opens which way:	UP	Vertex:	$(-1, -4)$ $(-1)^2 + 2(-1) - 3 = 1 - 2 - 3 = -4$

2) Equation in Standard Form:	$f(x) = 2x^2 + 2x - 1$ $F(x) = 4x^2 - 1$		
Equation in Factored Form:	$F(x) = (2x - 1)(2x + 1)$		
x-intercepts:	$2x - 1 = 0 \Rightarrow x = \frac{1}{2}$ $2x + 1 = 0 \Rightarrow x = -\frac{1}{2}$ $(\frac{1}{2}, 0) (-\frac{1}{2}, 0)$		
y-intercept:	$(0, -1)$		
Point symmetric to y-intercept:	NONE		
Leading Coefficient:	4		
Axis of Symmetry:	$X = 0$	Vertex represents a Minimum or Maximum:	MINIMUM
Parabola opens which way:	UP	Vertex:	$(0, -1)$

3) Equation in Standard Form:	$F(x) = -x^2 + 4x + 12$ $= -(x^2 - 4x - 12)$		
Equation in Factored Form:	$F(x) = -(x-2)(x+2)$		
x-intercepts:	$(6, 0)$ $(-2, 0)$		
y-intercept:	$(0, 12)$		
Point symmetric to y-intercept:	$(4, 12)$		
Leading Coefficient:	-1		
Axis of Symmetry:	$x=2$	Vertex represents a Minimum or Maximum:	MAXIMUM
Parabola opens which way:	DOWN	Vertex:	$-(2^2 + 4(2) + 12)$ $-4 + 8 + 12$ $4 + 12$ 16

4) Equation in Standard Form:	$f(x) = x^2 + 5x + 3x + 15$ $f(x) = x^2 + 8x + 15$		
Equation in Factored Form:	$F(x) = (x+3)(x+5)$		
x-intercepts:	$(-3, 0)$ $(-5, 0)$		
y-intercept:	$(0, 15)$		
Point symmetric to y-intercept:	$(-8, 15)$		
Leading Coefficient:	1		
Axis of Symmetry:	$x=-4$	Vertex represents a Minimum or Maximum:	MINIMUM
Parabola opens which way:	UP	Vertex:	$(-4 + 3)(-4 + 5)$ $(-1)(1)$ -1

Directions: For each equation, identify the initial value (I.V.) and the percent increase or decrease.

5) $f(x) = 100(1.75)^x$ 	6) $f(x) = 0.7(3.106)^x$ 	7) $f(x) = 8(0.75)^x$
I.V. <u>100</u> % Inc/Dec: 75%	I.V. <u>0.7</u> % Inc/Dec: 210.6%	I.V. <u>8</u> % Inc/Dec: 25%

8) Equation in Standard Form:	$-2(x^2 + 6x + 8)$ $-2(x^2 + 2x + 8)$ $f(x) = -2x^2 - 12x - 16$	
Equation in Factored Form:	$F(x) = -2(x+4)(x+2)$	
x-intercepts:	$(-4, 0)$ $(-2, 0)$	
y-intercept:	$(0, -16)$	
Point symmetric to y-intercept:	$(-6, -16)$	
Leading Coefficient:	-2	
Axis of Symmetry:	$x = -3$	Vertex represents a Minimum or Maximum: MAXIMUM $-2(-3+4)(-3+2)$
Parabola opens which way:	DOWN	Vertex: $(-3, 2)$ $-2(+1)(-1) = 2$
9) Equation in Standard Form:	$F(x) = x^2 + 7x + 12$	
Equation in Factored Form:	$f(x) = (x+3)(x+4)$	
x-intercepts:	$(-3, 0)$ $(-4, 0)$	
y-intercept:	$(0, 12)$	
Point symmetric to y-intercept:	$(-7, 12)$	
Leading Coefficient:	1	
Axis of Symmetry:	$\frac{-3+4}{2} =$ $x = -3.5$	Vertex represents a Minimum or Maximum: MINIMUM $(-3.5)^2 + 7(-3.5) + 12 = -2.25$
Parabola opens which way:	UP	Vertex: $(-3.5, -2.25)$
Directions: Solve.	Directions: Solve the system.	Directions: Find x, when f(x) = 5.
10) $\frac{w-6}{4} + 2 = 10$ $-2 \quad -2$ $\frac{w-6}{4} = 8(4)$ $w-6 = 32$ $+6 \quad +6$ $w = 38$	11) $3x + y = -2$ $-3x + 3y = 3$ $y = -2 - 3x$ $9x + 3(-2 - 3x) = -2$ $9x - 6 - 9x = -2$ $-6 = -2$ NO SOL.	12) $f(x) = 2x - 15$ $5 = 2x - 15$ $+15 \quad +15$ $20 = 2x$ $\frac{20}{2} = \frac{2x}{2}$ $10 = x$ $f(10) = 5$