



# Algebra 1

## Topic: Using Intercept Form

### Instructions

Solve the following problems. Graph each quadratic function, label the vertex, axis of symmetry, and x-intercepts. Describe the domain and range of the function.

### Practice Problems

1. Graph the quadratic function. Label the vertex, axis of symmetry, and x-intercepts. Describe the domain and range.

(i) $f(x) = (x + 3)(x - 5)$	(iv) $p(x) = (x + 2)(x + 3)$
(ii) $g(x) = (x - 4)(x + 2)$	(v) $q(x) = 5(x + 1)(x + 2)$
(iii) $h(x) = (x + 6)(x - 1)$	(vi) $r(x) = (x - 5)(x + 1)$

2. Graph the quadratic function. Label the vertex, axis of symmetry, and x-intercepts. Describe the domain and range.

(i) $f(x) = x^2 - 9$	(iv) $p(x) = -2x^2 - 4x + 30$
(ii) $g(x) = 3x^2 - 48$	(v) $q(x) = -5x^2 + 5x$
(iii) $h(x) = x^2 + 9x + 14$	(vi) $r(x) = x^2 + 6x - 27$

3. In the following problems, find the zero(s) of the function.

(i) $f(x) = (x + 4)(x - 2)$
(ii) $g(x) = -2(x - 2)(x - 10)$

- (iii)  $h(x) = x^2 + 5x - 24$
- (iv)  $p(x) = x^2 - 17x + 52$
- (v)  $q(x) = (x + 6)(x - 4)$

## Multiple-Choice Questions

- What is the vertex of the function  $f(x) = (x + 3)(x - 5)$ ?
 

A. $(-3, 5)$	C. $(1, -5)$
B. $(3, -5)$	D. $(1, 5)$
- What is the axis of symmetry for the function  $g(x) = (x - 4)(x + 2)$ ?
 

A. $x = 4$	C. $x = -1$
B. $x = -2$	D. $x = 0$
- What is the range of the function  $h(x) = (x + 6)(x - 1)$ ?
 

A. $y \geq 0$	C. $y \geq 2$
B. $y \leq 0$	D. $y \leq 2$
- What is the transformation of the function  $p(x) = (x + 2)(x + 3)$  compared to  $f(x) = x^2$ ?
 

A. Shifted left by 2 units, shifted up by 3 units	C. Shifted right by 2 units, shifted down by 3 units
B. Shifted left by 3 units, shifted up by 2 units	D. Shifted right by 3 units, shifted down by 2 units
- What is the x-intercept of the function  $q(x) = (x - 1)(x + 4)$ ?
 

A. $x = 1$ and $x = -4$	C. $x = 1$ and $x = 4$
B. $x = -1$ and $x = 4$	D. $x = -1$ and $x = -4$
- What is the axis of symmetry for the function  $r(x) = (x - 5)(x + 2)$ ?
 

A. $x = -5$	C. $x = 2$
B. $x = 5$	D. $x = -2$

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