Practice: Get Ready

Relations

1. Graph each relation.

a)

x	y
−2	30
−1	20
0	10
1	0
2	−10

b)

x	y
0	0
1	2
2	8
3	18
4	32

c)

x	y
−2	8
−1	2
0	0
1	2
2	8

d)

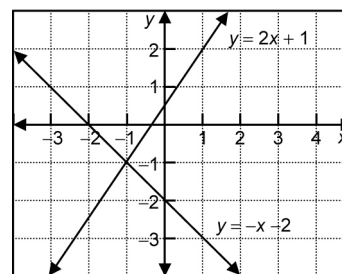| x	y
0	5
1	4
2	3
3	2
4	1

2. For each relation in question 1, state whether the relation is linear, quadratic, or neither. Explain how you know.
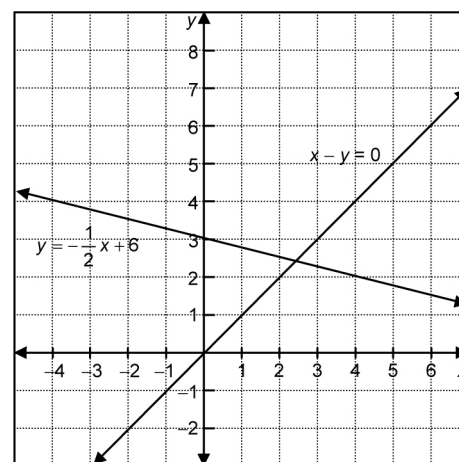
Linear Systems

3. Find the solution to each linear system.

a)

b)

4. Find the solution to each linear system.

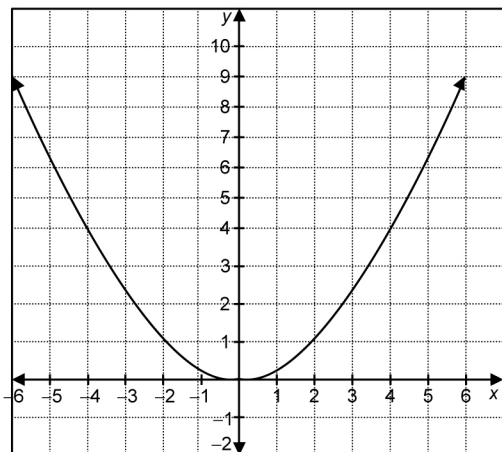**a)** $x + y = 4$
$x + 2y − 1 = 0$
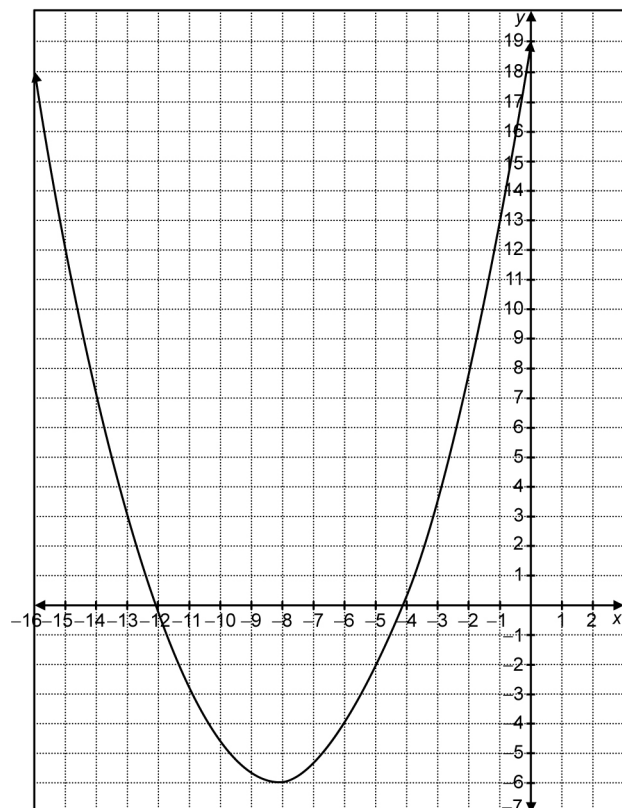
b) $y = 2x + 1$
$y = x − 1$

Key Features of Quadratic Relations

5. For each parabola, identify the coordinates of the vertex, the equation of the axis of symmetry, and the *x*- and *y*-intercepts.
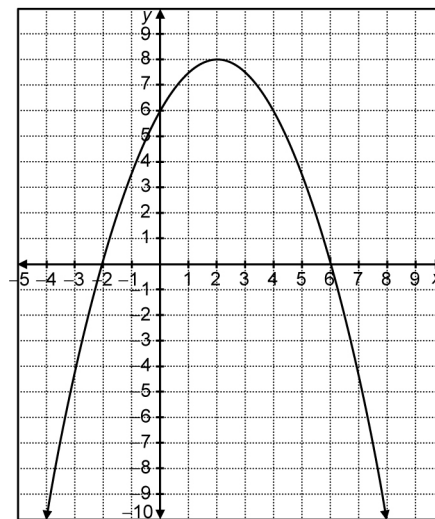
a)

b)

c)

Algebraic Operations

6. Substitute the known value into the equation, then solve for *y*.
  a) $y = -4x + 5$ $x = -3$
  b) $y = x^2 - 9$ $x = -1$
  c) $y = -2x^2 - 3$ $x = 2$
  d) $y = x^2 + 6x + 5$ $x = 0$
  e) $x + 3y = 12$ $x = -6$
  f) $x^2 - y = 2$ $x = 4$

7. Expand and simplify.
  a) $-3x(x + 4)$ **b)** $5x(2 - x)$
  c) $(x - 1)(x + 4)$ **d)** $(x + 6)^2$
  e) $(2x - 1)(2x + 1)$ **f)** $-5(x + 2)(x - 1)$

8. Find the greatest common factor, then factor each polynomial.
  a) $-12x^2 - 18$ **b)** $7x^2 - 21x$
  c) $4x^2 - 8x + 24$ **d)** $16 - 36x^2$

9. Factor each polynomial.
  a) $x^2 + 5x + 6$ **b)** $x^2 - 7x + 10$
  c) $x^2 + 3x - 18$ **d)** $x^2 - 14x + 49$
  e) $x^2 - 25$ **f)** $4x^2 - 9$