

Chapter 7U

Getting Ready, page 568

- (a) $x^2 + 4x + 4$ (b) $x^2 - 6x + 9$ (c) $x^2 - 5x + \frac{25}{4}$

(d) $x^2 - x + \frac{1}{4}$ (e) $x^2 + 3x + \frac{9}{4}$
- (a) $(x + 1)^2$ (b) $(x + 2)^2$ (c) $(x - 4)^2$

(d) $5(x - 3)^2$ (e) $2(x - 7)^2$
- (a) vertex: (0, 0), axis of symmetry: $x = 0$

(b) vertex: (0, -3), axis of symmetry: $x = 0$

(c) vertex: (2, 6), axis of symmetry: $x = 2$

(d) vertex: (-1, -1), axis of symmetry: $x = -1$

(e) vertex: (4, 0), axis of symmetry: $x = 4$
- (a) parabola, opens up, vertex (0, 0), through (2, 4) and (-2, 4)

(b) parabola, opens up, vertex (0, -3), through (-1, -1) and (1, -1)

(c) parabola, opens up, vertex (2, 6), through (0, 10) and (4, 10)

(d) parabola, opens up, vertex (-1, -1), through (0, 2) and (-2, 2)

(e) parabola, opens up, vertex (4, 0), through (2, 8) and (6, 8)
- (a) $x^2 + y^2 = 25$ (b) $x^2 + y^2 = 64$ (c) $x^2 + y^2 = 2$

(d) $x^2 + y^2 = 15$ (e) $x^2 + y^2 = 18$
- (a) $AB = \sqrt{2}$ (b) $AB = \sqrt{2}$ (c) $AB = \sqrt{145}$

(d) $AB = \sqrt{34}$ (e) $AB = \sqrt{2}$
- (a) slope: $\frac{2}{3}$, x-int.: 3, y-int.: -2

(b) slope: -1, x-int.: 8, y-int.: 8

(c) slope: 0, x-int.: none, y-int.: -3

(d) slope: 2, x-int.: $-\frac{1}{2}$, y-int.: 1

(e) slope: -4, x-int.: -3, y-int.: -12

(f) slope: 4, x-int.: 2, y-int.: -8

(g) slope: undefined, x-int.: 2, y-int.: none
- (a) $y = 4x + 2$ (b) $y = -\frac{4}{3}x + 4$ (c) $y = 2x + 2$

(d) $y = 5$ (e) $y = -x + 4$
- (a) (2, -2) (b) (-4, 6) (c) $y = -3$ (d) $x = 2$
- (a) (3, 2) (b) (-1, 2) (c) (3, 5) (d) (1, 7)
- (a) 3 (b) $2x$ (c) $x + 5$ (d) $4x - 3$

(e) 7 (f) x (g) $(x - 5)$ (h) $3x + 9$

- (a) $y = 2x - 5$ (b) $y = -\frac{1}{3}x - 2$

(c) $y = \pm\sqrt{x-5}$ (d) $y = \pm\sqrt{-3-x} - 1$

(e) $y = \pm\sqrt{\frac{x-4}{2}} + 3$ (f) no solution

(g) $y = \pm\sqrt{9-x^2}$ or $y = \pm\sqrt{(3-x)(3+x)}$
- (a) straight line through (0, 30 and (-1.5, 0); $D = \mathbf{R}$, $R = \mathbf{R}$

(b) top half of parabola opening to right, vertex (-2, 0) through (2, 2); $D = \{x | x \geq -2, x \in \mathbf{R}\}$, $R = \{y | y \geq 0, y \in \mathbf{R}\}$

(c) circle centred on origin, radius 5;
 $D = \{x | -5 \leq x \leq 5, x \in \mathbf{R}\}$, $R = \{y | -5 \leq y \leq 5, y \in \mathbf{R}\}$

(d) straight line through (0, 3) and (2, 3); $D = \mathbf{R}$,
 $R = \{y | y = 3, y \in \mathbf{R}\}$

(e) parabola, opens down, vertex (0, 2) through (-2, -2) and (2, -2); $D = \mathbf{R}$, $R = \{y | y \leq 2, y \in \mathbf{R}\}$

(f) straight line through (0, -20 and (5, 0); $D = \mathbf{R}$, $R = \mathbf{R}$

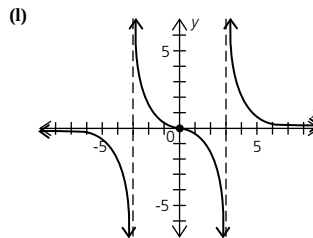
(g) circle centred on origin, radius 4;
 $D = \{x | -4 \leq x \leq 4, x \in \mathbf{R}\}$, $R = \{y | -4 \leq y \leq 4, y \in \mathbf{R}\}$

(h) parabola, opens up, vertex (-1, -4) through (-3, 0) and (1, 0); $D = \mathbf{R}$, $R = \{y | y \geq -4, x \in \mathbf{R}\}$

(i) parabola, opens right, vertex (3, 2) through (7, 0) and (7, 4);
 $D = \{x | x \geq 3, x \in \mathbf{R}\}$, $R = \mathbf{R}$

(j) straight line through (-4, 0) and (-4, 2);
 $D = \{x | x = -4, x \in \mathbf{R}\}$, $R = \mathbf{R}$

(k) hyperbola, horizontal asymptote $y = -2$, vertical asymptote $x = 0$; $D = \{x | x \neq -2, x \in \mathbf{R}\}$, $R = \{y | y \neq 0, y \in \mathbf{R}\}$



$$D = \{x | x \neq \pm 3, x \in \mathbf{R}\}, R = \mathbf{R}$$

- (a) $y = (x + 5)^2 - 33$ (b) $y = \left(x + \frac{7}{2}\right)^2 - \frac{41}{4}$

(c) $y = 2(x + 2)^2 - 13$ (d) $y = -3\left(x - \frac{5}{6}\right)^2 + \frac{37}{12}$

(e) $y = 4\left(x - \frac{9}{8}\right)^2 - \frac{177}{16}$ (f) $y = -5\left(x - \frac{1}{10}\right)^2 - \frac{201}{20}$