Review 2 Answers

1. (a) $\varnothing$; (b) $\left\{-\frac{1}{2}, 3\right\}$; (c) $\{-1\}$; (d) $\{2\}$; (e) $\{-9, 124\}$; (f) $\{-25, 29\}$.

2. 1.2 hours

3. (a) $[1, \infty)$; (b) $[-7, -3)$; (c) $(-\infty, -4] \cup [1, \infty)$; (d) $\left(-\frac{2}{3}, \frac{5}{2}\right)$; (e) $(-2, 2)$;
(f) $\left(-\infty, \frac{2}{3}\right] \cup \left(\frac{5}{3}, \infty\right)$.

4. (a) $\left\{\frac{6}{5}, 4\right\}$; (b) $\varnothing$; (c) $\left\{-\frac{9}{13}, -3\right\}$; (d) $\{-2, 4\}$

5. (a) $\varnothing$; (b) $(-\infty, \infty)$; (c) $(-20, 25)$; (d) $\left(-\infty, -\frac{7}{2}\right) \cup \left(\frac{3}{2}, \infty\right)$

6. midpoint: (3,4); distance: 5

7. yes

8. yes

9. (a) $(x+2)^2+(y-3)^2 = 225$; (b) $(x+8)^2+(y-1)^2 = 289$; (c) $(x-6)^2+(y+5)^2 = 36$.

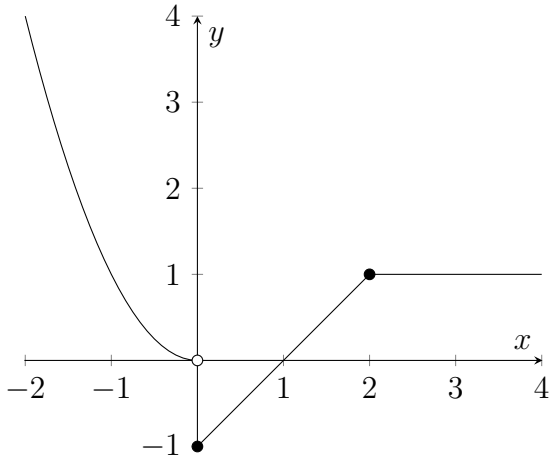
10. y is a function of x for (b),(c), and (e)
(a) D: $\left[-\frac{2}{3}, \infty\right)$, R: $(-\infty, \infty)$, x-axis symmetry
(b) D: $(-\infty, \infty)$, R: $(-\infty, \infty)$, origin symmetry
(c) D: $(-\infty, \infty)$, R: $(-\infty, 0]$, y-axis symmetry
(d) D: $[-3, 3]$, R: $[-3, 3]$, symmetric w.r.t. both axes and origin
(e) D:$[-3, 3]$, R: $[0, \infty)$, y-axis symmetry

11. (a) $\frac{1}{8}$; (b) $\frac{1}{9}$

12. $4x - 3y = -15$

13. $y = -\frac{2}{3}x - \frac{8}{5}$

14. $f(-2) = 4; f(0) = -1; f(1) = 0; f(2) = 1; f(4) = 1; f$ is increasing on (0,2), decreasing on $(-\infty, 0)$ and constant on $(2, \infty)$



15. (a) symmetric about x-axis; x-int: $(-1, 0)$; y-int: $(0, \pm 1)$
(b) symmetric about the origin; x-int and y-int: (0,0)
(c) no symmetry; x-int: (3,0); y-int: $\left(0, -\frac{3}{2}\right)$

16. (a) neither (b) even (c) odd (d) even

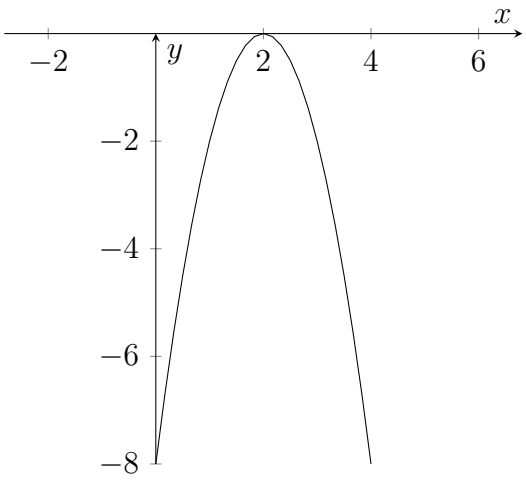
17. 4

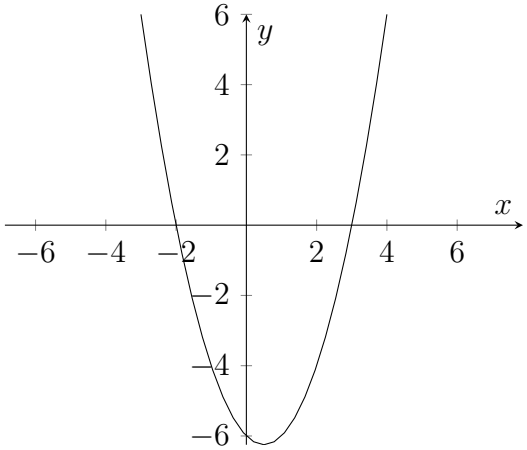
18. Reflect across the x-axis, shift right three units, and shift up one unit; domain: $[3, \infty)$; range: $(-\infty, 1]$

19. Reflect across the x-axis, horizontal shift 2 units left, vertical shift 1 unit up. Should be always decreasing with domain and range $(-\infty, \infty)$.

20. (a) $D = [-2, 7]$ and $R = [-5, 1]$ (b) $D = [-2, 7]$ and $R = [1, 7]$
(c) $D = [-7, 2]$ and $R = [-1, 5]$ (d) $D = [0, 9]$ and $R = [-2, 4]$

21. (a) $f(x) = -2(x-2)^2 + 0$; Vertex: (2,0); x-intercept (2,0); y-intercept $(0, -8)$
(b) $f(x) = \left(x - \frac{1}{2}\right)^2 - \frac{25}{4}$; Vertex: $\left(\frac{1}{2}, -\frac{25}{4}\right)$; x-intercepts: $(-2, 0), (3, 0)$; y-intercept: $(0, -6)$





22. (a) No; range: $[1, \infty)$ (b) $y = \frac{1}{2}(x+1)^2 + 1$

23. (a) maximum height 196 feet at $t = 2.5$ seconds (b) 6 seconds

24. 45 meters by 90 meters