

Precalculus Practice CCE – Answers

1. $y = \sqrt{-\frac{1}{2}x}$

2. 240°

3. $\frac{5\pi}{3}$

4. $(1, \sqrt{3})$

5. $\left(4, \frac{3\pi}{4}\right)$

6. *does not exist*

7. no absolute minimum or maximum,
relative maximum at $(-0.758, 13.469)$
relative minimum at $(1.758, -2.469)$

8. $\left\{-3, 1 - \sqrt{3}, \frac{1}{2}, 1 + \sqrt{3}\right\}$

9. upward concavity on $\left(\frac{\pi}{2} + 1, \frac{3\pi}{2} + 1\right)$
downward concavity on $\left(0, \frac{\pi}{2} + 1\right) \cup \left(\frac{3\pi}{2} + 1, 2\pi\right)$

10. increasing on $(1, \infty)$
decreasing on $(-\infty, -2)$

11. vertical asymptote at $x = 2$

12. (a) odd
 (b) even
 (c) neither
 (d) neither
 (e) odd

13. $y = \log_2 x$

14. $f^{-1}(x) = \sqrt[4]{x} - 1$

15. $f^{-1}(x) = \frac{1}{2} \ln x$

16. $x = \frac{\ln 8}{\ln(3/2)} \approx 5.419$

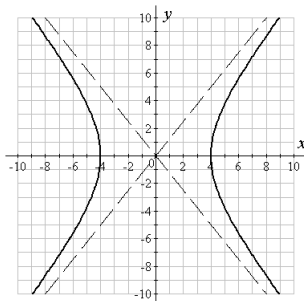
17. $x = 10\sqrt{10} \approx 31.623$

18. $x = \frac{-1 + 3\sqrt{37}}{2} \approx 8.624$

19. 2

20. 1991 ($t = 30.8$)

21. 18.4 years



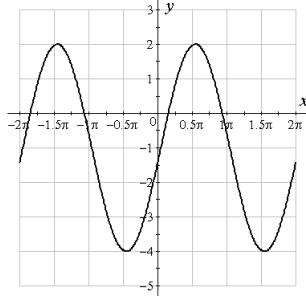
22.

23. $\frac{(x-4)^2}{36} + \frac{y^2}{64} = 1$

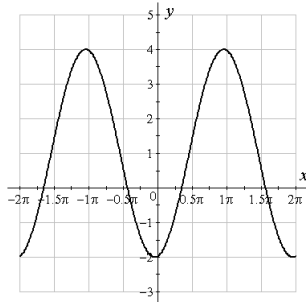
24. $d(w) = 0.087w - 2.286$
10.8 mg
25. $R(x) = 4.179 \sin(0.535x - 1.273) + 8.973$
26. (c) and (d)
27. $(-5) + (-3) + (-1) + 1 + 3 + 5 + 7 + 9 = 16$
28. recursive: $u_n = 2 \cdot u_{n+1}$, $u_1 = 3$
explicit: $u_n = 3(2)^{n-1}$
29. $S_7 = 381$
30. $C = 55.665^\circ$
31. *none*
32. *none*
33. 28.871
34. $A = 48.1^\circ$, $B = 56.9^\circ$, $C = 75^\circ$
 $a = 16$, $b = 20.8$, $c = 18$
35. $\mathbf{x} = \langle -20, 19 \rangle$
36. $\left\langle -\frac{5}{2}, \frac{5\sqrt{3}}{2} \right\rangle$
37. $\langle -10, 8 \rangle$
38. $-19\mathbf{i} - 35\mathbf{j}$
39. $\sqrt{89}$
40. -58°

41. $\mathbf{w} \cdot \mathbf{v} = -3$

42. (b) is orthogonal



43.



44.

45. $x = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

46. (c) had a maximum of $y = 7$

47. (a) odd
 (b) even
 (c) even
 (d) odd
 (e) odd

48. $-\frac{\pi}{6}$

49. $\frac{4}{5}$

50. $\cot(-\theta)$ or $-\cot \theta$

51. $-4\sin x \cos x$ or $-2\sin 2x$

52. $60^\circ + 180^\circ + 300^\circ = 540^\circ$

53. 112.0 ft

54. 300.0 ft

55. $\frac{20\pi}{3} \approx 20.944$ ft/min

56. $\frac{56\pi}{9} \approx 19.548$ ft

57. $\frac{8\pi}{3} \approx 8.378$ ft/min

58. $\frac{28\pi}{3} \approx 29.322$ in

59. 61.5 ft

60. $\frac{106}{3}$ ft

61. $\frac{(x-8)^2}{4} - \frac{(y-4)^2}{5} = 1$

62. vertices: $(0, -1)$ and $(0, 9)$
asymptotes: $y = \pm \frac{5}{4}x + 4$

63. $f(-4.292) = -233.086$

64. major axis length: $6\sqrt{3}$
minor axis length: 6

65. $\left\{-3, -\frac{1}{2}, 3\right\}$