

Extra Function Review

Solve each equation. Remember to check for extraneous solutions.

1) $\sqrt{\frac{n}{5}} = \sqrt{6-n}$

2) $1 - \sqrt{5-n} = \sqrt{4-n}$

3) $\sqrt{n-4} = \sqrt{2n-11}$

4) $\sqrt{3n+26} = \sqrt{-2-n}$

5) $3 = \sqrt{\frac{k}{8}}$

6) $\sqrt{10n} = 3 - \sqrt{3n+9}$

Identify the domain and range of each.

7) $y = \sqrt{x+6}$

8) $y = \sqrt{x+4}$

9) $y = \sqrt{x-1} + 4$

10) $y = \frac{3}{4}\sqrt{x}$

Identify the holes, vertical asymptotes, x-intercepts, horizontal asymptote, and domain of each. Then sketch the graph.

11) $f(x) = \frac{x-1}{3x^2+3x-18}$

12) $f(x) = \frac{x-4}{-3x+3}$

13) $f(x) = \frac{x}{x-4}$

14) $f(x) = \frac{x^3 - x^2 - 2x}{-3x^2 + 9x}$

Solve each equation.

15) $\frac{1}{6} \cdot 36^{3p+1} = 36$

16) $4^m = 64^{-3m}$

17) $\frac{16}{2^{-b-1}} = 2^{2b-3}$

18) $6^{n+2} = 36$

Solve each equation. Round your answers to the nearest ten-thousandth.

19) $-3 \cdot 15^{5x} = -85$

20) $-4 \cdot 2^{-7k} = -69$

21) $-3 \cdot 19^{r+3} = -41$

22) $14^{x-9} - 8 = 13$

Expand each logarithm.

23) $\log_5 (11^2 \sqrt[3]{6})$

24) $\log_6 (ab^2)^3$

Condense each expression to a single logarithm.

25) $4\log_8 a + 4\log_8 b$

26) $6\log_8 c + \frac{\log_8 a}{2}$

Solve each equation.

27) $\log_3 (x^2 + 7) - \log_3 4 = \log_3 11$

28) $\log_8 (x - 7) + \log_8 10 = 1$

29) $\log_5 3x - \log_5 6 = \log_5 30$

30) $\log_5 (x + 4) - \log_5 x = 1$

31) $\log_5 2x - \log_5 3 = 2$

32) $\log_6 x + \log_6 (x + 2) = \log_6 3$

Using radians, find the amplitude and period of each function. Then graph.

$$33) y = \frac{1}{2} \cdot \tan\left(2\theta - \frac{\pi}{4}\right) - 2$$

$$34) y = 2\cos\left(4\theta + \frac{\pi}{6}\right)$$

$$35) y = 4\cos\left(2\theta + \frac{\pi}{3}\right) - 2$$

$$36) y = 4\sin\left(\theta - \frac{\pi}{2}\right) - 1$$

Solve each equation for $0 \leq \theta < 2\pi$.

$$37) -\frac{1}{3} = \frac{2}{3} \cdot \cos \theta$$

$$38) 5 + \cos \theta = \frac{9}{2}$$

$$39) 3 + \sin \theta = \frac{6 - \sqrt{3}}{2}$$

$$40) -3\cos \theta = 3$$

Answers to Extra Function Review

- 1) {5}
5) {72}

- 2) {4}
6) {0}

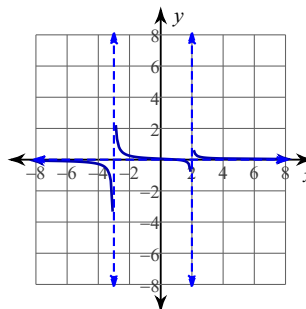
- 3) {7}
7) Domain: $x \geq -6$
Range: $y \geq 0$

- 4) {-7}
8) Domain: $x \geq -4$
Range: $y \geq 0$

- 9) Domain: $x \geq 1$
Range: $y \geq 4$

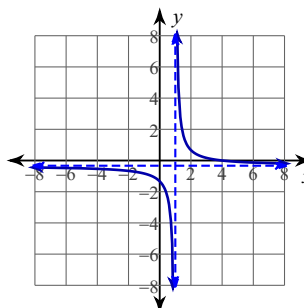
- 10) Domain: $x \geq 0$
Range: $y \geq 0$

11)



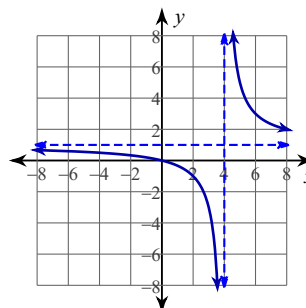
Vertical Asym.: $x = 2, x = -3$
Holes: None
Horz. Asym.: $y = 0$
X-intercepts: 1
Domain:
All reals except 2, -3

12)



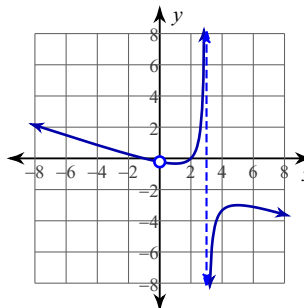
Vertical Asym.: $x = 1$
Holes: None
Horz. Asym.: $y = -\frac{1}{3}$
X-intercepts: 4
Domain:
All reals except 1

13)



Vertical Asym.: $x = 4$
Holes: None
Horz. Asym.: $y = 1$
X-intercepts: 0
Domain:
All reals except 4

14)



Vertical Asym.: $x = 3$
Holes: $x = 0$
Horz. Asym.: None
X-intercepts: 2, -1
Domain:
All reals except 3, 0

- 15) $\left\{\frac{1}{6}\right\}$

- 16) {0}

- 17) {8}

- 18) {0}

- 19) 0.247

- 20) -0.5869

- 21) -2.1119

- 22) 10.1536

- 23) $2 \log_5 11 + \frac{\log_5 6}{3}$

- 24) $3 \log_6 a + 6 \log_6 b$

- 25) $\log_8 (b^4 a^4)$

- 26) $\log_8 (e^6 \sqrt{a})$

- 27) $\{\sqrt{37}, -\sqrt{37}\}$

- 28) $\left\{\frac{39}{5}\right\}$

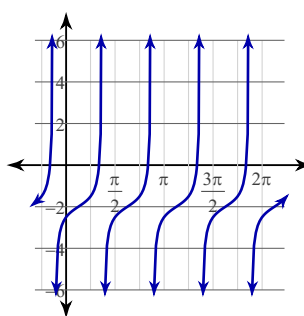
- 29) {60}

- 30) {1}

- 31) $\left\{\frac{75}{2}\right\}$

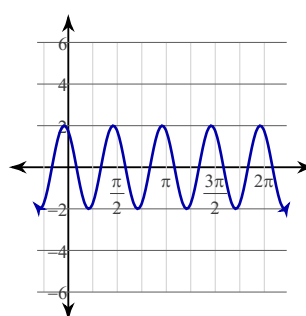
- 32) {1}

33)



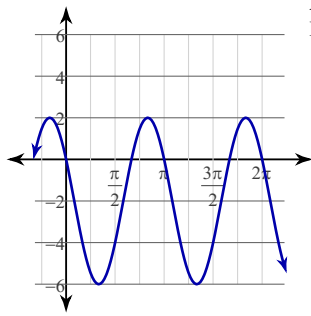
Amplitude: None
Period: $\frac{\pi}{2}$

34)



Amplitude: 2
Period: $\frac{\pi}{2}$

35)

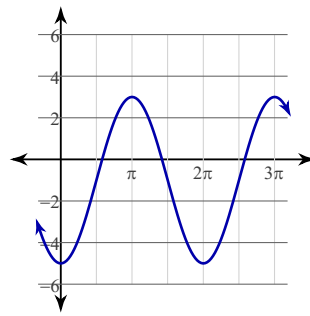


Amplitude: 4
Period: π

37) $\left\{ \frac{2\pi}{3}, \frac{4\pi}{3} \right\}$

38) $\left\{ \frac{2\pi}{3}, \frac{4\pi}{3} \right\}$

36)



Amplitude: 4
Period: 2π

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

40) $\{\pi\}$