

For each of the following functions, identify the domain and range of the “primary” phase and the period.

	Domain	Range	Period
1. sine	_____	_____	_____
2. cosine	_____	_____	_____
3. cosecant	_____	_____	_____
4. secant	_____	_____	_____
5. tangent	_____	_____	_____
6. cotangent	_____	_____	_____

Fill in the blank.

- To graph a secant or cosecant, you would first graph it's _____ function.
 (Hint: It's a word that starts with the letter “r”.)
- The reciprocal of secant is _____.
- The reciprocal of cosecant is _____.
- Secant, cosecant, tangent, and cotangent all have undefined values that are represented by a(an) _____ on the graph.

Graph and identify the period, domain, range, and asymptotes.

11. $y = 3 \csc\left(2x - \frac{\pi}{6}\right)$

12. $y = \frac{1}{2} \sec\left(\frac{x}{3} + \frac{\pi}{4}\right)$

13. $y = 3 \tan(2\theta - 40^\circ)$

14. $y = \cot\left(\frac{x}{2} - \pi\right)$

15. $y = 2 \cot(3\theta - 90^\circ) - 2$

16. $y = -\csc\left(\frac{x}{3}\right)$

17. $y = 2 \sec\left(\frac{x}{2} - \frac{\pi}{4}\right)$

18. $y = -3 \tan(4x - \pi)$

Answers

1. D: $[0, 2\pi]$ R: $[-1, 1]$ pd = 2π 2. D: $[0, 2\pi]$ R: $[-1, 1]$ pd = 2π

3. D: $(0, \pi) \cup (\pi, 2\pi)$ R: $(-\infty, -1] \cup [1, \infty)$ pd = 2π

4. D: $\left[0, \frac{\pi}{2}\right) \cup \left(\frac{\pi}{2}, \frac{3\pi}{2}\right) \cup \left(\frac{3\pi}{2}, 2\pi\right]$ R: $(-\infty, -1] \cup [1, \infty)$ pd = 2π

5. D: $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$ R: $(-\infty, \infty)$ pd = π

6. D: $(0, \pi)$ R: $(-\infty, \infty)$ pd = π

7. reciprocal

8. cosine

9. sine

10. asymptote

11. pd = 2π D: $\left(\frac{\pi}{12}, \frac{7\pi}{12}\right) \cup \left(\frac{7\pi}{12}, \frac{13\pi}{12}\right)$ R: $(-\infty, -3] \cup [3, \infty)$ asy @ $\frac{\pi}{12}, \frac{7\pi}{12}, \frac{13\pi}{12}$

12. pd = 6π D: $\left[-\frac{3\pi}{4}, \frac{3\pi}{4}\right) \cup \left(\frac{3\pi}{4}, \frac{15\pi}{4}\right) \cup \left(\frac{15\pi}{4}, \frac{21\pi}{4}\right]$ R: $\left(-\infty, -\frac{1}{2}\right] \cup \left[\frac{1}{2}, \infty\right)$ asy @ $\frac{3\pi}{4}, \frac{15\pi}{4}$

13. pd = 90° D: $(-25^\circ, 65^\circ)$ R: $(-\infty, \infty)$ asy @ $-25^\circ, 65^\circ$

14. pd = 2π D: $(2\pi, 4\pi)$ R: $(-\infty, \infty)$ asy @ $2\pi, 4\pi$