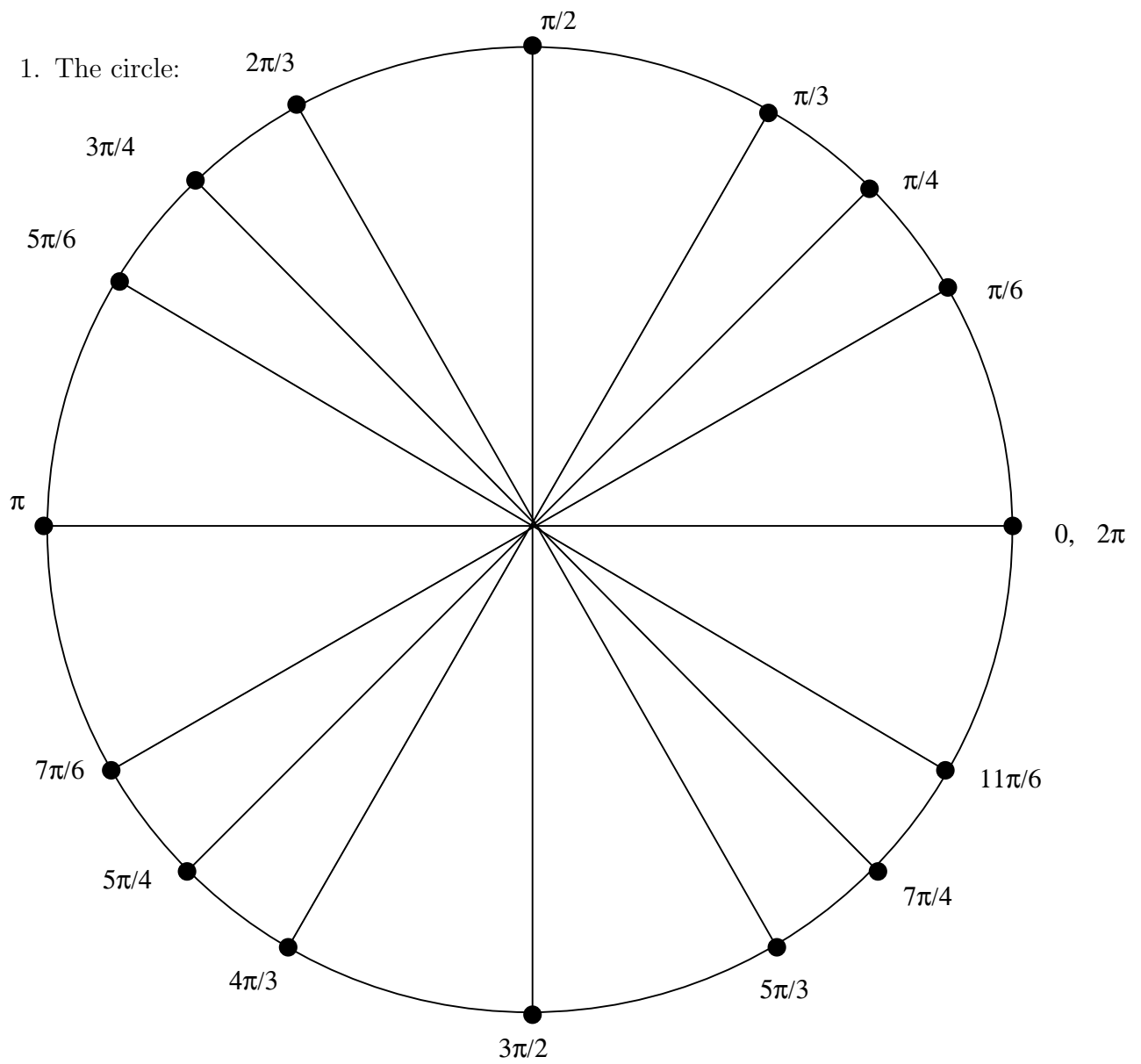


Section 5.1



Section 5.2

1. even

3. odd

5. even

7. odd

9. (a) $-\sin(x)\cos(x)$ (b) $-\sin^3(x)\cos^2(x)$

11. (a) $\frac{1}{4}$ (b) $\sqrt{3}$ (c) -2

Section 5.3

In Exercises 1, 3, and 5, the intercepts shown must be labeled on the graph given.

1. x -intercepts: $-2\pi, -\pi, 0, \pi, 2\pi$

y -intercept is $(0, 0)$

reflected over x , amplitude 1, period 2π

3. x -intercepts: $\frac{-3\pi}{2}, \frac{-\pi}{2}, \frac{\pi}{2}, \frac{3\pi}{2}$

y -intercept is $(0, -1)$

amplitude 1, period 2π , phase shift $-\pi$

5. x -intercepts: $-6, -4, -2, 0, 2, 4, 6$

y -intercept is $(0, 0)$

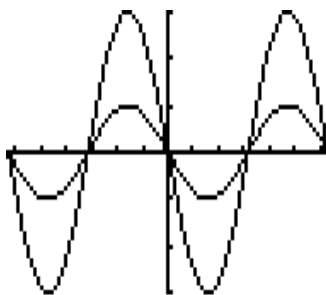
amplitude 2, period 4, reflected over x

7. D amplitude 2, period 4π , so 2 periods 8π

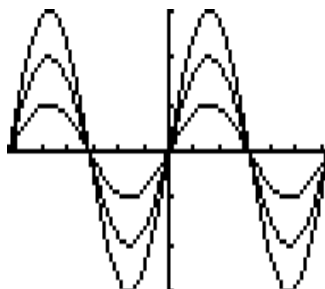
9. no graph given amplitude 2, reflect x , period π , so 2 periods 2π

11. C amplitude 2, period 4π , so 2 periods 8π

13. (a) $y_1 = \{-3, -1\}\sin(x)$
 $[-2\pi, 2\pi]$ by $[-3, 3]$



- (b) $y_1 = \{1, 2, 3\}\sin(x)$
 $[-2\pi, 2\pi]$ by $[-3, 3]$



(c) x -intercepts do not change as A changes.

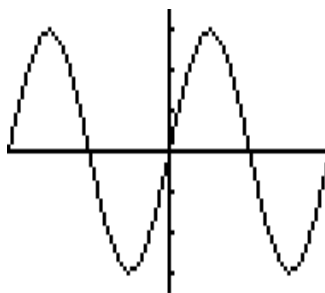
(d) The amplitude gets larger as $|A|$ gets larger.

(e) Changing A does not affect the period.

15. period is $\frac{\pi}{60}$, amplitude is 3

$$y_1 = 3\sin(120x)$$

$$\left[-\frac{\pi}{60}, \frac{\pi}{60}\right] \text{ by } [-3.5, 3.5]$$

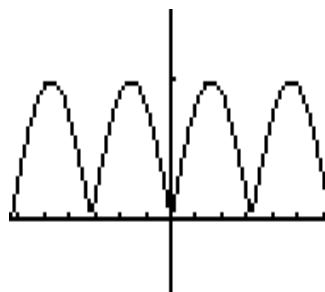


17. period is π

$$y_1 = \text{abs}(\sin(x))$$

$$[-2\pi, 2\pi] \text{ by } [-.5, 1.5]$$

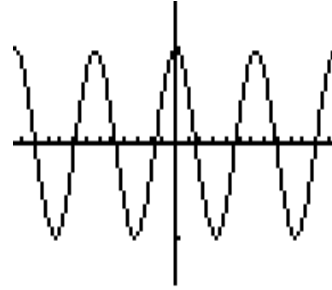
x -intercepts are 0, 3.14159 = π , 6.28318 = 2π , etc.,
 so the period is π .



19. period is 2π

$$y_1 = \cos(\text{abs}(x))$$
$$[-4\pi, 4\pi] \text{ by } [-1.5, 1.5]$$

Maximum values are 0 and $6.28318 = 2\pi$, etc.,
so the period is 2π .



Section 5.4

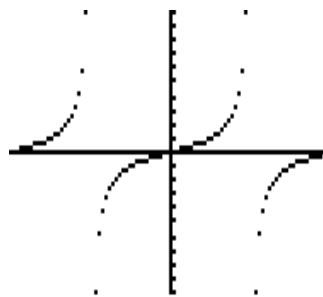
In Exercises 1, 3, and 5 the intercepts shown must be labeled on the graph given.

1. x -intercepts: $-\pi, 0, \pi$ vertical asymptotes: $x = -\frac{\pi}{2}, x = \frac{\pi}{2}$
reflect x , period π
3. x -intercepts: $-\frac{\pi}{4}, \frac{\pi}{4}$ vertical asymptotes: $x = -\frac{\pi}{2}, x = 0, x = \frac{\pi}{2}$
period $\frac{\pi}{2}$
5. y -axis units of 1 vertical asymptotes: $x = -1, x = 0, x = 1$
reflect x , period 2
7. E period 2π , phase shift $\frac{\pi}{2}$, asymptotes $x = -2\pi, -\pi, 0, \pi, 2\pi$
9. no graph given period π , asymptotes $x = \frac{-\pi}{2}, 0, \frac{\pi}{2}$
11. F reflect x , period 2π , asymptotes $x = -2\pi, -\pi, 0, \pi, 2\pi$
13. no graph given period 1, asymptotes $x = -\frac{3}{2}, -\frac{1}{2}, 0, \frac{1}{2}, \frac{3}{2}$

15. period is $\frac{\pi}{25}$

$$y_1 = \tan(25x)$$

$$\left[-\frac{\pi}{25}, \frac{\pi}{25}\right] \text{ by } [-10, 10]$$

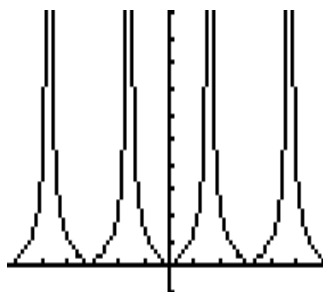


17. period is π

$$y_1 = \text{abs}(\tan(x))$$

$$[-2\pi, 2\pi] \text{ by } [-10, 10]$$

x -intercepts are $0, 3.14159 = \pi$, etc.
so the period is π .



19. period is 2π

$$y_1 = 1/\cos(\text{abs}(x))$$

$$[-2\pi, 2\pi] \text{ by } [-5, 5]$$

The local maximum values shown
are at $x = -3.14159 = -\pi, 3.14159 = \pi$,
so the space between local maximum values is 2π .

