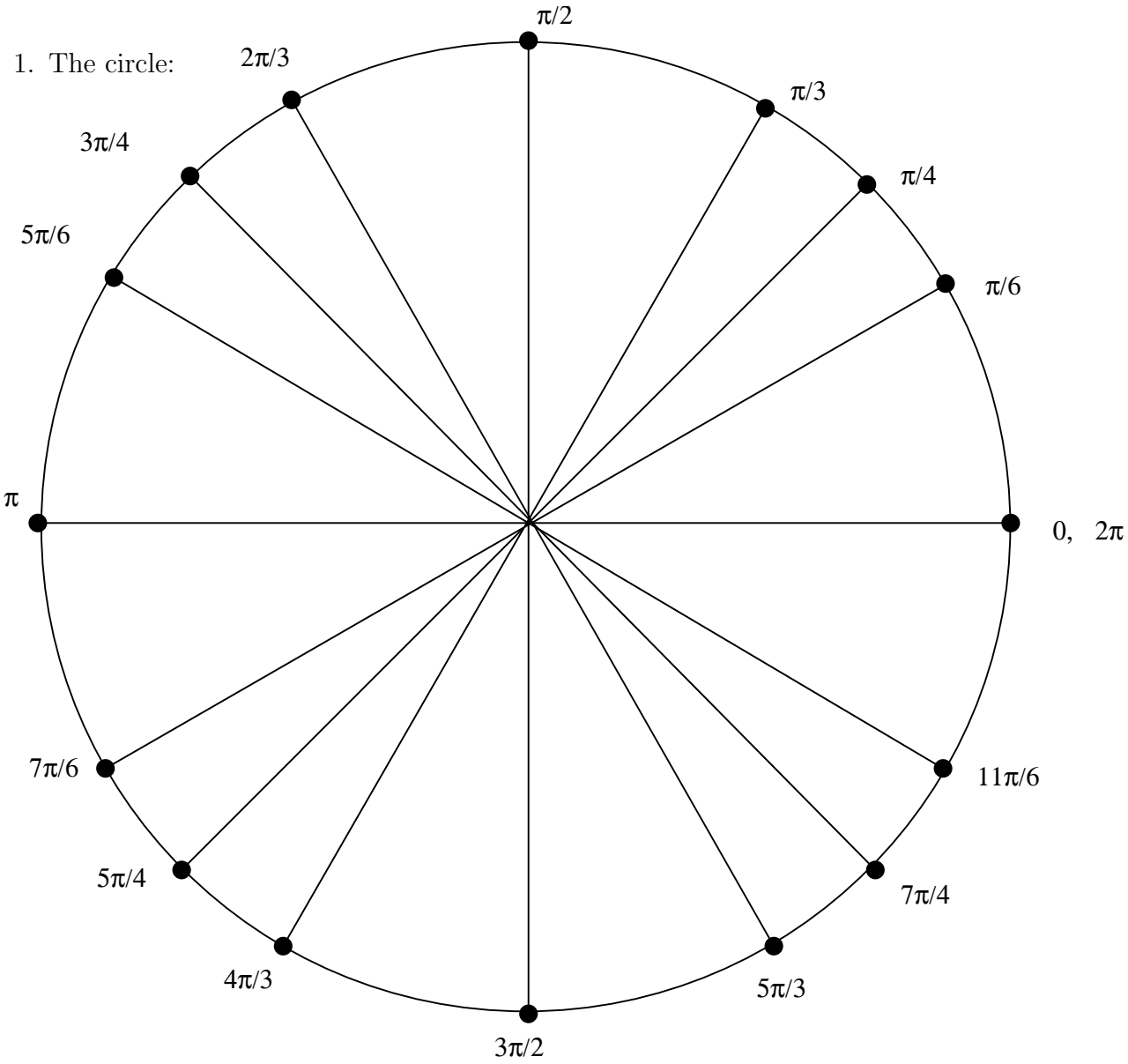
Section 5.1

1. The circle:



Section 5.2

1. even
3. odd
5. even
7. odd

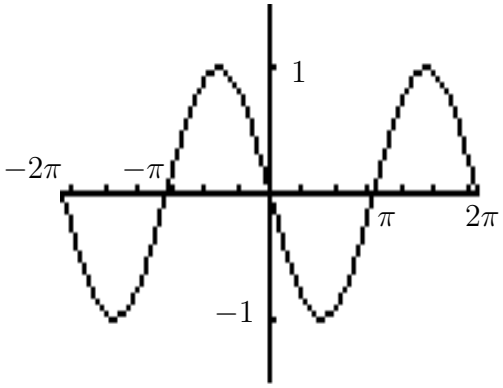
9. (a) $\sin^2(x)$ (b) $-\sin^3(x)\cos(x)$

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

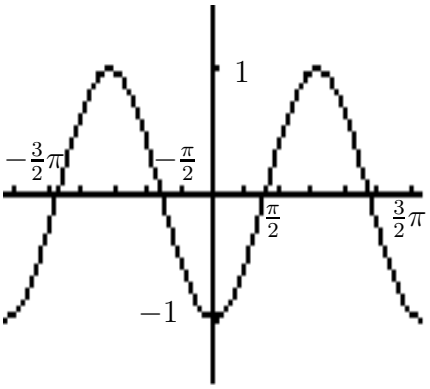
Section 5.3

The labels on the graphs are for the $x-$intercepts, not the tickmarks.

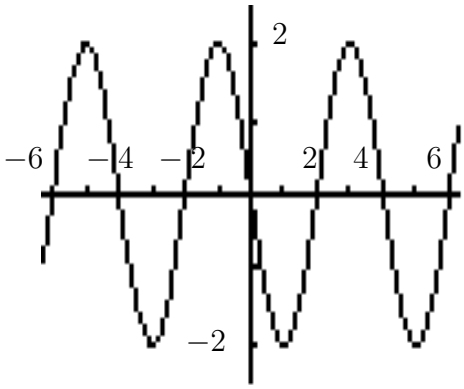
1. reflected over x, amplitude 1, period 2π



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



5. amplitude 2, period 4, reflected over x

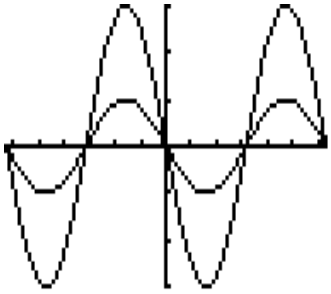


7. D amplitude 2, period 4π, so 2 periods 8π

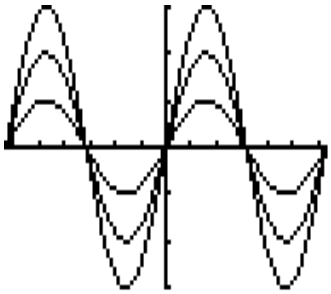
9. no graph given amplitude 2, reflect x, period π, so 2 periods 2π

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

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



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

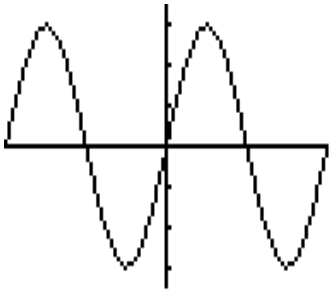


(c) $x-$intercepts do not change as A changes.

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

(e) Changing A does not affect the period.

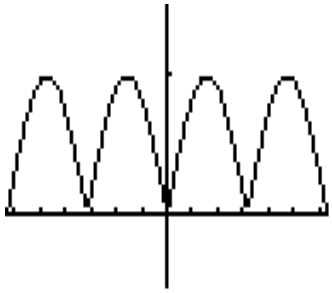
15. period is $\dfrac{\pi}{60}$, amplitude is 3
$\mathtt{y_1} = \mathtt{3sin(120x)}$
$\left[-\dfrac{\pi}{60}, \dfrac{\pi}{60}\right]$ by $[-3.5, 3.5]$



17. period is π

$\mathtt{y_1} = \mathtt{abs(sin(x))}$
$[-2\pi, 2\pi]$ by $[-.5, 1.5]$

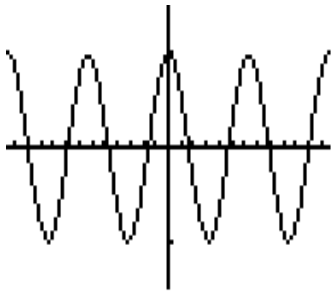
$x-$intercepts are 0, $3.14159 = \pi$, $6.28318 = 2\pi$, etc., so the period is π.



19. period is 2π

$y_1 = \texttt{cos(abs(x))}$

$[-4\pi, 4\pi]$ by $[-1.5, 1.5]$

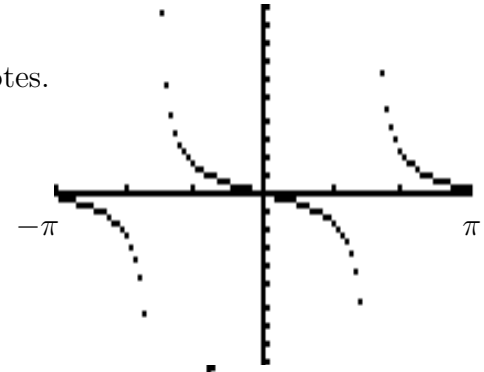


Maximum values are 0 and $6.28318 = 2\pi$, etc., so the period is 2π.

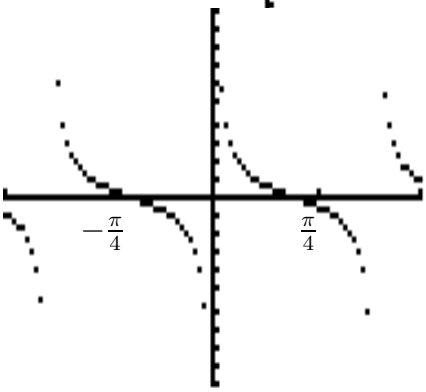
Section 5.4

The labels on the graphs are for the $x-$intercepts, not the tickmarks. Be sure to draw in the dashed asymptotes.

1. vertical asymptotes: $x = -\dfrac{\pi}{2},\ x = \dfrac{\pi}{2}$
   reflect x, period π



3. vertical asymptotes: $x = -\dfrac{\pi}{2},\ x = 0,\ x = \dfrac{\pi}{2}$
   period $\dfrac{\pi}{2}$



5. $y-$axis units of 1 vertical asymptotes: $x = -1,\ x = 0,\ x = 1$
   reflect x, period 2

7. E period 2π, phase shift $\dfrac{\pi}{2}$, asymptotes $x = -2\pi,\ -\pi,\ 0,\ \pi,\ 2\pi$

9. no graph given period π, asymptotes $x = \dfrac{-\pi}{2},\ 0,\ \dfrac{\pi}{2}$

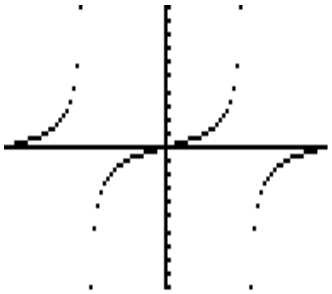
11. F reflect x, period 2π, asymptotes $x = -2\pi,\ -\pi,\ 0,\ \pi,\ 2\pi$

13. no graph given period 1, asymptotes $x = -\frac{3}{2},\ -\frac{1}{2},\ 0,\ \frac{1}{2},\ \frac{3}{2}$

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

$y_1 = \texttt{tan(25x)}$

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

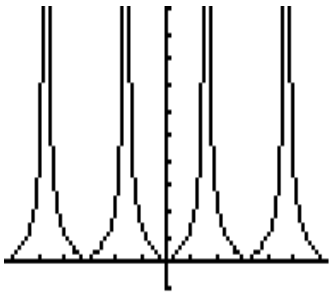


17. period is π

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

$[-2\pi, 2\pi]$ by $[-10, 10]$

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



19. period is 2π

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

$[-2\pi, 2\pi]$ 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.