Graphing Trig Functions Review   Name: __Key_____ Block: __

Determine the amplitude and period of each function.

1. $y = \sin 4x$
      $a = 1$
      $p = \frac{\pi}{2}$
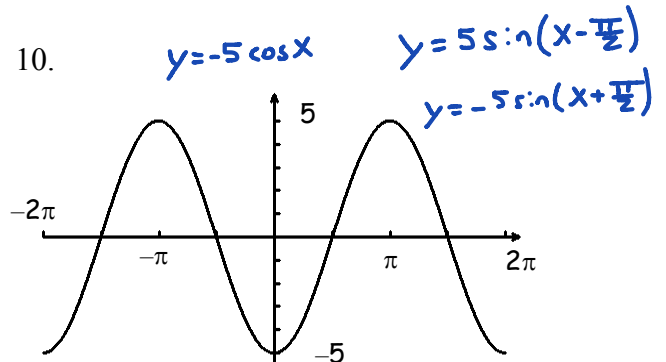
2. $y = \cos 5x$
      $a = 1$
      $p = \frac{2\pi}{5}$
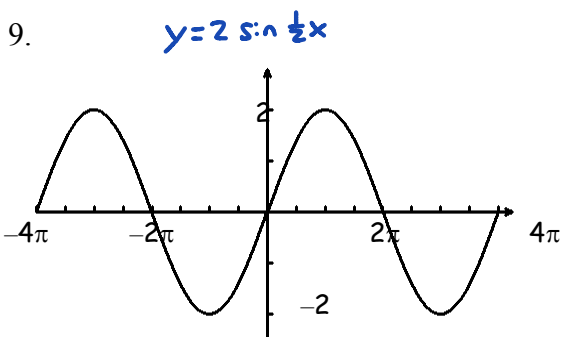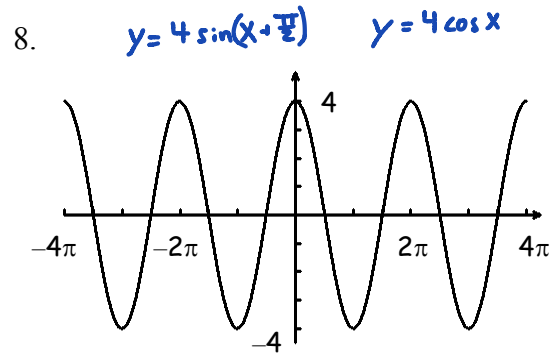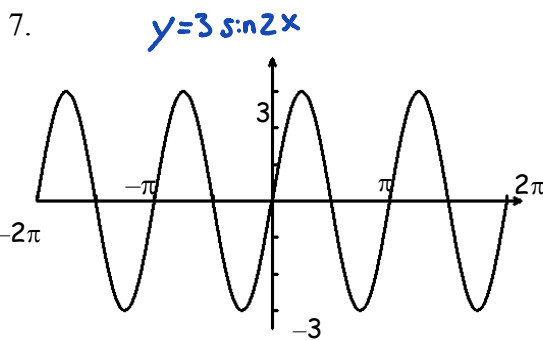
3. $y = 2 \sin x$
      $a = 2$
      $p = 2\pi$

4. $y = -4 \sin 3x$
      $a = 4$
      $p = \frac{2\pi}{3}$

5. $y = 2 \sin(-4x)$
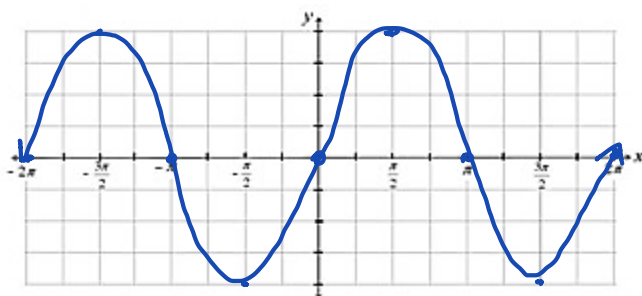 $a = 2$
      $p = \frac{\pi}{2}$

6. $y = 3 \sin \frac{2}{3}x$
      $a = 3$
      $p = 3\pi$

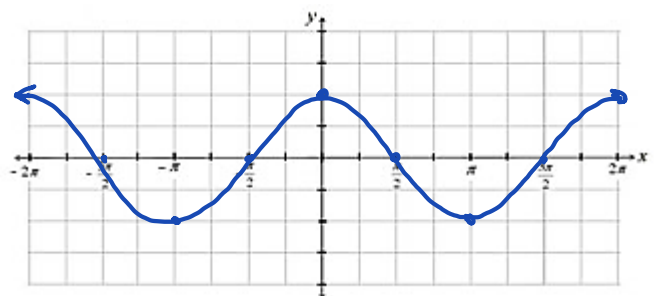Give the amplitude and period of each function graphed below. Then write an equation of each graph.

7. $y = 3 \sin 2x$

8. $y = 4 \sin(x + \frac{\pi}{2})$ $y = 4 \cos x$

9. $y = 2 \sin \frac{1}{2}x$

10. $y = -5 \cos x$ $y = 5 \sin(x - \frac{\pi}{2})$
      $y = -5 \sin(x + \frac{\pi}{2})$

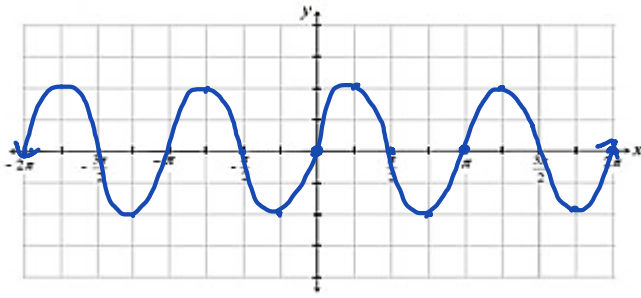Sketch the graph of the function over the interval $-2\pi \le x \le 2\pi$.
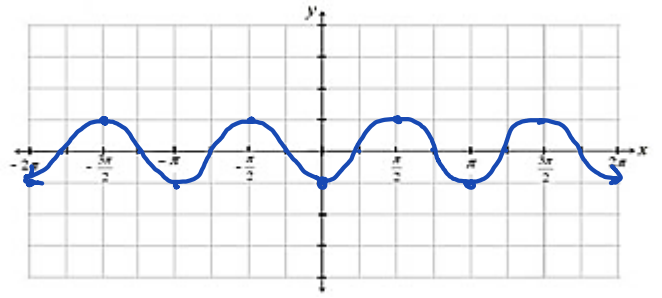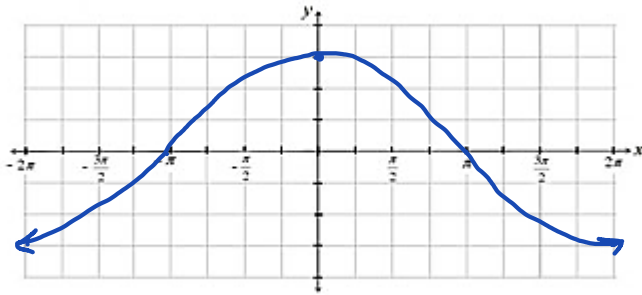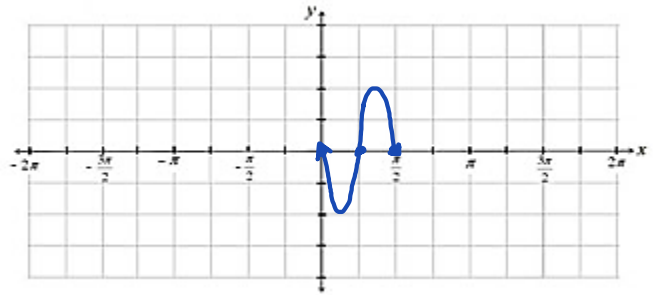
11. $y = 4 \sin x$

12. $y = 2 \cos x$

13. y = 2 sin 2x

14. y = – cos 2x

15. y = 3 cos $\frac{1}{2}$ x

16. y = – 2 sin (4x)

Determine the amplitude, period, phase shift, and vertical shift for each.

17. $y = 2 + 3\sin\left(4x + \dfrac{\pi}{2}\right)$

a = 3
h = $\frac{\pi}{8}$ left
K = 2 up   Period = $\frac{\pi}{2}$

18. y = 2 cos (x – π)

a = 2
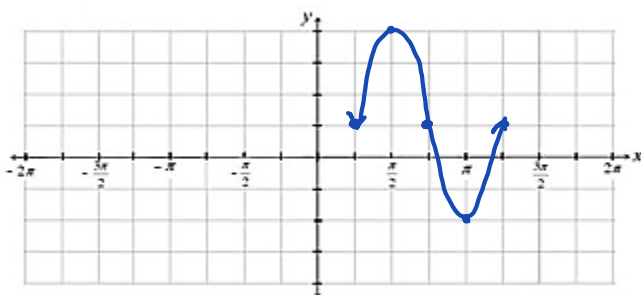h = π right
Period = 2π

19. $y = \dfrac{1}{2}\cos 2x - 4$

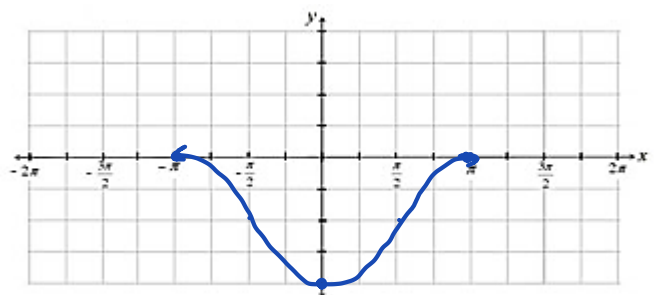a = $\frac{1}{2}$
K = –4 down
Period = π

20. $y = 3 + 4\sin(x - \pi)$

a = 4
h = π right
K = 3
Period = 2π

Sketch the graph of each function for ONE PERIOD.
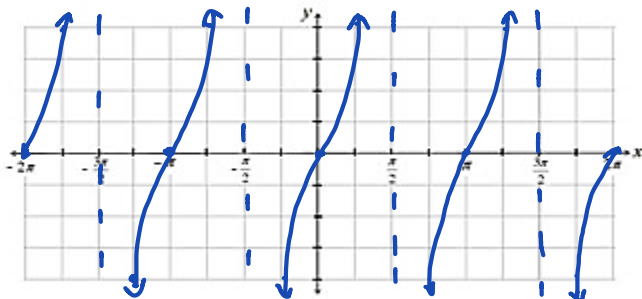
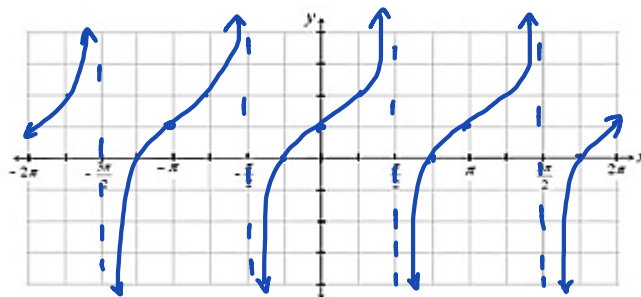21. $y = 1 + 3\sin\left(2x - \dfrac{\pi}{2}\right)$

22. $y = 2\cos(x + \pi) - 2$

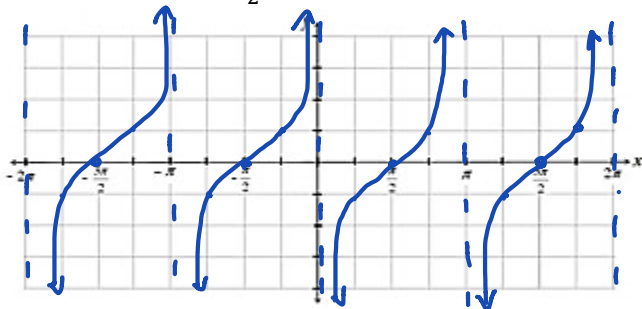Sketch the graph of the function over the interval $-2\pi \le x \le 2\pi$.

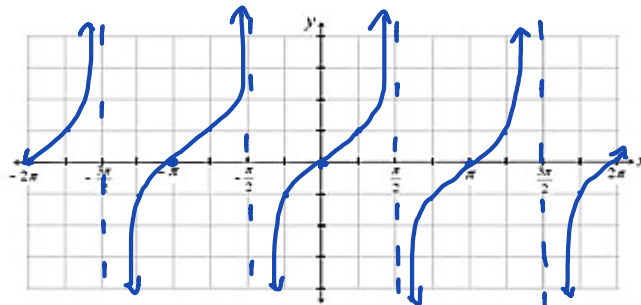23. $y = 4 \tan x$

24. $y = \tan x + 1$

25. $y = \tan \left(x + \dfrac{\pi}{2}\right)$

26. $y = \tan x$

27. Suppose you are riding a Ferris wheel. After everyone is loaded, the wheel starts to turn and the ride last for 105 seconds. Your height (in feet) above ground at any time (in seconds) can be modeled by the equation $h(t) = 50 \sin\left(\dfrac{\pi}{10}(t - 4)\right) + 65$

a. What is the period?   What does the period represent?

   20   Seconds

b. What is your maximum height?   What is your minimum height?

   115 ft

c. How many circles will the Ferris Wheel make during the ride?

   5.25

d. How high are you when the ride begins?

   $h(0) = 63.9$ ft

e. What is your height when the ride stops?

   $h(105) = 91.3$ ft

28. When an earthquake hits and creates a tsunami. The water first goes down from its normal level, and then rises an equal distance above its normal level, then returns to its normal level. A tsunami is approaching Trig island and is modeled by: $d = 10 \sin\left[\dfrac{2\pi}{15}(t - 7.5)\right] + 11$ where d is the water's depth in meters and t is the time in minutes since the earthquake. This model works for one cycle.

a. What is the maximum height of the tsunami?

   21 ft

b. what is the normal depth of water at Trig island?

   11 ft

c. What is the period of the function?

   15 minutes