10.1 Amplitude and Midline

PRACTICE

State the amplitude and midline of the following trig functions.

1. $f(x) = 3\sin(x) - 4$

Amplitude: 3

Midline: $y = -4$

2. $f(\theta) = -\frac{1}{4}\cos(\theta) + 1$

Amplitude: $1/4$

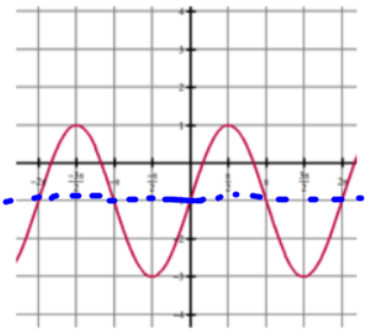
Midline: $y = 1$

3. $h(x) = \sin(x) - 2.5$

Amplitude: 1

Midline: $y = -2.5$

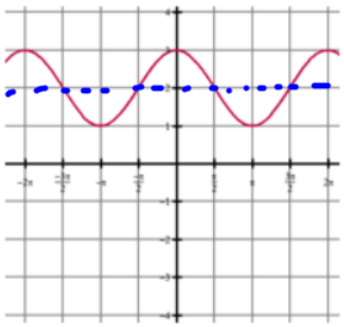
4.



Amplitude : 2

Midline: $y = -1$

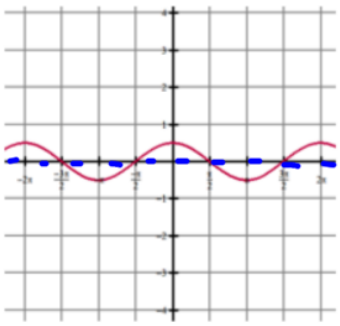
5.



Amplitude : 1

Midline: $y = 2$

6.



Amplitude : $1/2$

Midline: $y = 0$

7. $f(x) = 4 + 2\sin(x)$

Amplitude: 2

Midline: $y = 4$

same as

$f(x) = 2\sin(x) + 4$

8. $y = -\sin(x)$

Amplitude: 1

Midline: $y = 0$

9. $f(\theta) = 1 - 3\sin(\theta)$

Amplitude: 3

Midline: $y = 1$

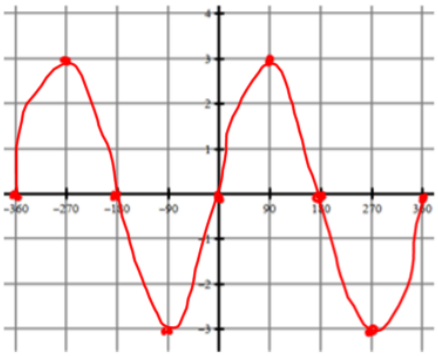
same as

$f(\theta) = -3\sin(\theta) + 1$

State the amplitude and midline. Graph the trig function on the interval $0° \le x \le 360°$

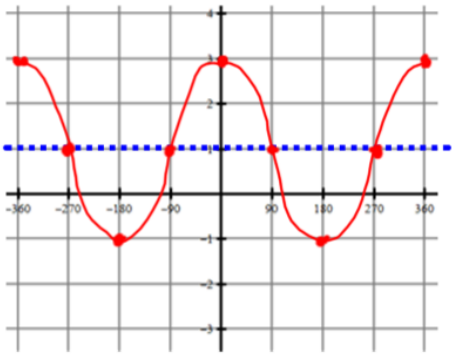
10. $f(x) = 3\sin(x)$

Amp = 3 Midline = $y = 0$



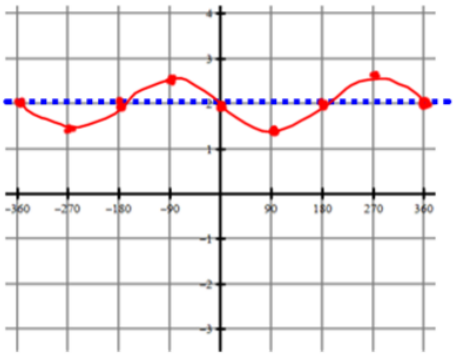
11. $f(x) = 2\cos(x) + 1$

Amp = 2 Midline = $y = 1$



12. $h(x) = -\frac{1}{2}\sin(x) + 2$

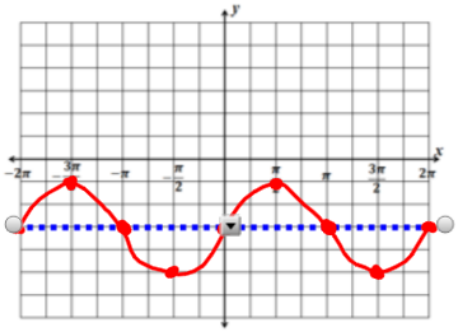
Amp = $1/2$ Midline = $y = 2$



State the amplitude and midline. Graph the trig function on the interval $-2\pi \le x \le 2\pi$

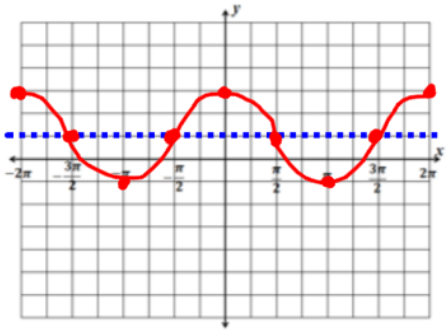
13. $f(x) = 2\sin(x) - 3$

Amp = 2 Midline = $y = -3$



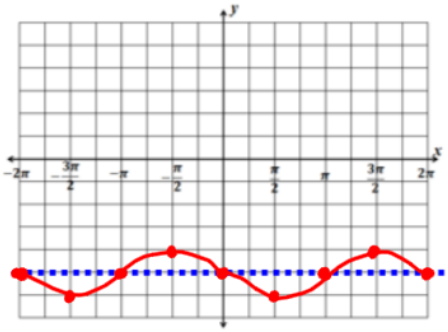
14. $f(x) = 2\cos(x) + 1$

Amp = 2 Midline = $y = 1$



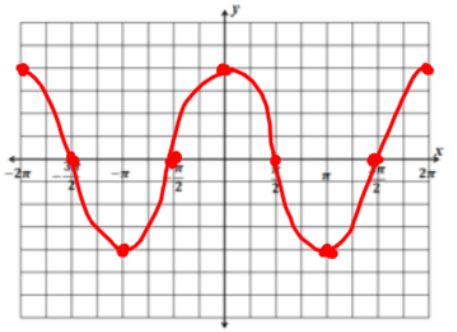
15. $h(x) = -\sin(x) - 5$

Amp = 1 Midline = $y = -5$



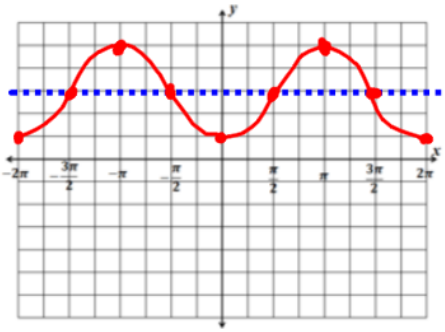
16. $f(x) = 4\cos(x)$

Amp = 4 Midline = $y = 0$



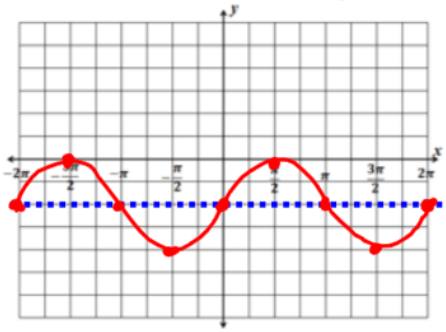
17. $f(x) = -2\cos(x) + 3$

Amp = 2 Midline = $y = 3$



18. $h(x) = 2\sin(x) - 2$

Amp = 2 Midline = $y = -2$



Write the equation of the following trig functions.

19. Sine curve

Amplitude = 7

Midline is $y = 2$

$f(x) =$ $7\sin(x) + 2$

20. Cosine curve

Amplitude $= \frac{1}{3}$

Vertical Shift down 3

$f(\theta) =$ $\frac{1}{3}\cos(\theta) - 3$

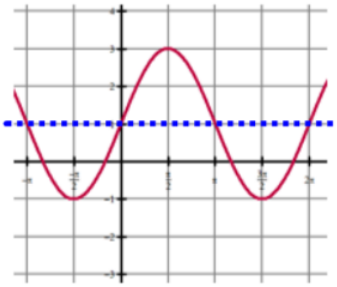
21. Negative sine curve

Amplitude = 5

Midline is $y = 1$

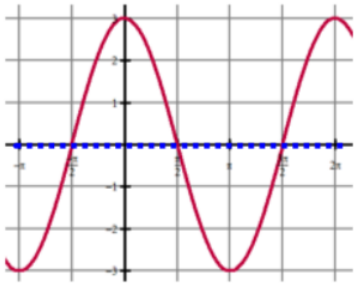
$f(x) =$ $-5\sin(x) + 1$

22.



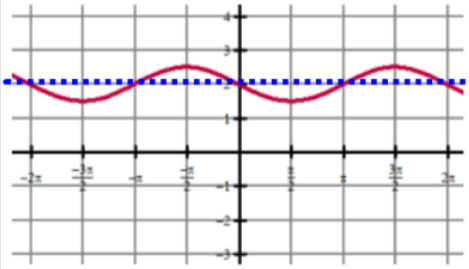
$f(\theta) =$ $2\sin(\theta) + 1$

23.



$f(x) =$ $3\cos(x)$

24.



$f(\theta) =$ $-\frac{1}{2}\sin(\theta) + 2$

Find the following:

25. Exact Value of tan 30°

$\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

26. Approximate Value of $\sin\left(\frac{\pi}{7}\right)$

calculator ≈ 0.433

(make sure you are in radians!)

27. The y-intercept of $f(x) = x^3 + 3x^2 + 2x - 9$

$f(0) = 0^3 + 3(0)^2 + 2(0) - 9$

$f(0) = -9$ $\boxed{(0, -9)}$