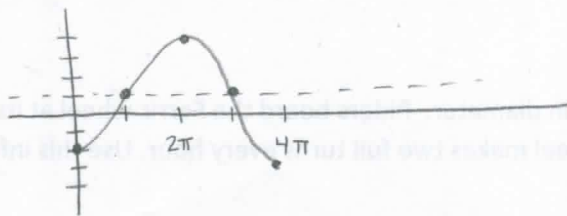


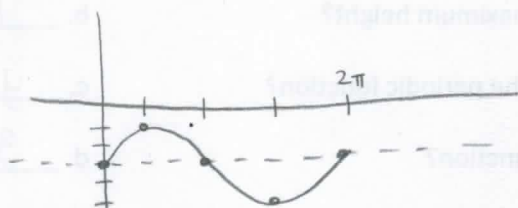
1. Sketch one cycle of the function  $y = -3 \cos\left(\frac{1}{2}x\right) + 1$ . Identify the amplitude, period, intervals, shifts, y-intercept and equation of midline.

Amp 3  
per  $4\pi$   
 $\uparrow 1$



2. Sketch one cycle of the function  $y = 2 \sin(x) - 3$ . Identify the amplitude, period, intervals, shifts, y-intercept and equation of midline.

amp 2  
 $\downarrow 3$   
per  $2\pi$



3. Find a negative and positive coterminal angle for the given angle. State the reference angle.

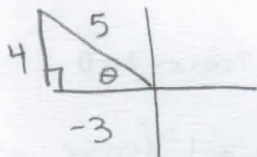
a.  $\frac{2\pi}{3}$

b.  $130^\circ$

$\frac{8\pi}{3}, \frac{-4\pi}{3}$  ref angle  $\frac{\pi}{3}$

$490^\circ, -230^\circ$  ref angle  $50^\circ$

4. Suppose  $\theta$  is in standard position. Given  $\sin \theta = \frac{4}{5}$  and the terminal side of  $\theta$  lies in Quadrant II, find the  $\cos \theta$  &  $\tan \theta$ .



$\cos \theta = \frac{-3}{5}$

$\tan \theta = \frac{-4}{3}$

5. Determine which quadrant the terminal side of the angle lies.

a.  $\cos \theta < 0$  &  $\tan \theta > 0$  III

b.  $\cos \theta < 0$  &  $\tan \theta < 0$  II

b.  $\cos \theta > 0$  &  $\tan \theta > 0$  I

d.  $\cos \theta > 0$  &  $\tan \theta < 0$  IV

6. Convert each angle to degrees or radians.

a.  $120^\circ$

$\frac{2\pi}{3}$

b.  $330^\circ$

$\frac{11\pi}{6}$

c.  $\frac{5\pi}{4}$

$225^\circ$

d.  $\frac{3\pi}{8} \cdot \frac{180}{\pi}$

$67.5^\circ$

7. Evaluate.

a.  $\cos\left(\frac{\pi}{2}\right)$

0

b.  $\sin(3\pi)$

0

c.  $\cos(135^\circ)$

$-\frac{\sqrt{2}}{2}$

d.  $\sin(210^\circ)$

$-\frac{1}{2}$

8. A carnival has a Ferris wheel that is 60 feet in diameter. Riders board the Ferris wheel at its lowest point, which is 10 feet above the ground. The Ferris wheel makes two full turns every hour. Use this information to answer the following questions.

a. What is the maximum height the Ferris wheel reaches?

a. 70 ft

b. How long will it take to first reach the maximum height?

b. 15 min

c. What is the equation of the midline of the periodic function?

c.  $y = 40$

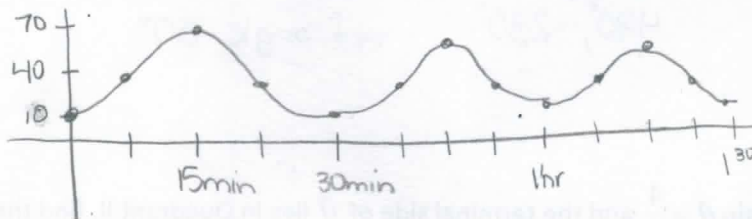
d. What is the amplitude of the periodic function?

d. 30

e. How high off the ground will you be at 1.5 hours?

e. 10 ft

f. Sketch **one** cycle of the periodic function that represents the situation.



Solve the equation in the indicated domain

$\sin x \cos 37^\circ = \cos x \sin 37^\circ \quad x \in [0, 360^\circ)$

$\sin x \cos 37^\circ - \cos x \sin 37^\circ = 0$

$\sin(x - 37^\circ) = 0$

$x - 37^\circ = 0^\circ, 180^\circ, 360^\circ$

$x = 37^\circ, 217^\circ$

$2 \cos^2 x - 7 \cos x - 4 = 0 \quad x \in [0, 360^\circ)$

$(2 \cos x + 1)(\cos x - 4) = 0$

$\cos x = -\frac{1}{2} \quad \cos x = 4$

$x = 120^\circ, 240^\circ$