

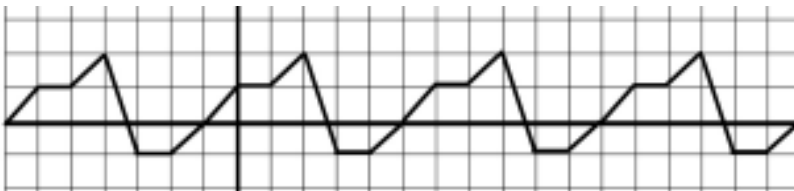
YOU MUST DO ALL YOUR WORK ON A SEPARATE PIECE OF PAPER FOR ALL BUT # 8, 9, 26

- The graph of a cubic function has a local minimum at (5, -3) and a point of symmetry at (0, 4). At what point does the local maximum occur?
- Find the point of symmetry of the graph of the cubic function  $f(x) = -x^3 + 15x^2 - 48x + 45$ . If the local minimum is (2, 1), find the local maximum.
- $x = 7$  is the line of symmetry of a graph, and (2, 13) and (10, -6) are on the graph, then so are \_\_\_\_
- If (7,3) is a point of symmetry for a graph and (-2, -4) and (10,-6) are on the graph, then so are \_\_\_\_
- Test  $x^2 + 2xy + 4 = 0$  to see if its graph has symmetry in the a) x axis; b) y axis; c) origin; d)  $y = x$
- Find the domain:

a.  $f(x) = \frac{x}{x^2 - 4}$

b.  $f(x) = \frac{x}{\sqrt{x^2 - 4}}$

c.  $f(x) = \sqrt{x^2 - 5x + 6}$



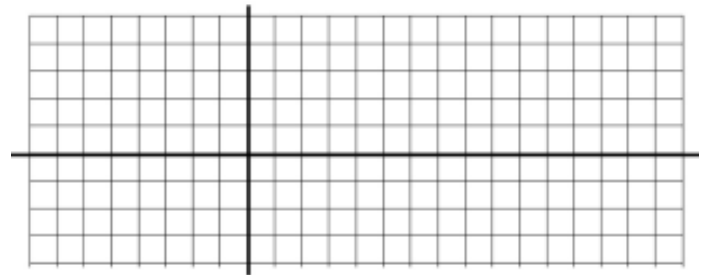
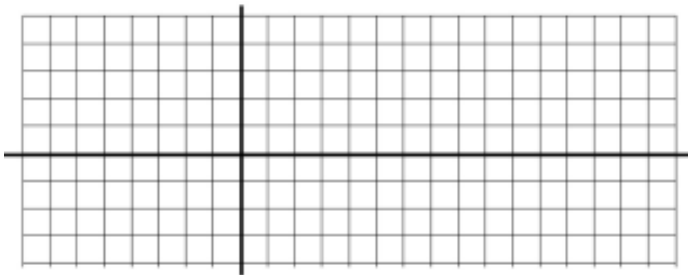
7. Find:

- period
- $f(45)$

- amplitude
- $f(-70)$

8.  $y = |f(x)|$

9)  $y + 1 = f(x - 2)$



- Convert  $140^\circ$  to radians in terms of  $\pi$
- Convert  $\frac{5\pi}{9}$  radians to degrees.
- In a circle of radius 6 in, a central angle cuts out an arc length 10 in. Find the measure of the central angle in radians.
- A sector of a circle has radius 9 in and central angle of  $48^\circ$ . Find its arc length and area. Give exact answer (no decimals)
- Given point (-5, 12) on the terminal side of angle  $\theta$  in standard position, find the 6 trig functions of angle  $\theta$  in simplified rationalized radical form.

15. Given  $\cos \theta = -\frac{2}{7}$  where  $\pi \leq \theta \leq \frac{3\pi}{2}$ . Find  $\sin \theta$ .

16. Find

- a)  $\cos 30^\circ$                       b)  $\csc 45^\circ$                       c)  $\tan 225^\circ$   
 d)  $\cot \frac{4\pi}{3}$                       e)  $\sin \frac{3\pi}{4}$                       f)  $\sec \frac{7\pi}{6}$

17. In radians and degrees find:

- a)  $\text{Cos}^{-1}\left(-\frac{1}{2}\right)$                       b)  $\text{Sin}^{-1}\left(-\frac{1}{2}\right)$                       c)  $\text{Tan}^{-1}(\sqrt{3})$   
 d)  $\text{C os}^{-1}(-1)$                       e)  $\text{S in}^{-1}(-1)$                       f)  $\text{T an}^{-1}(-1)$

18) Find exact answers in simplified rationalized radical form.

- a)  $\cos\left(\text{Sin}^{-1}\frac{3}{4}\right)$                       b)  $\csc\left(\text{Tan}^{-1}\left(-\frac{8}{3}\right)\right)$   
 c)  $\cot\left(\text{Cos}^{-1}\left(-\frac{48}{73}\right)\right)$                       d)  $\tan \text{Cos}^{-1}\left(\frac{-3}{5}\right)$

19. Find one positive and one negative angle that are coterminal with  $-115^\circ$

20. Find one positive and one negative angle that are coterminal with  $-\frac{11\pi}{4}$

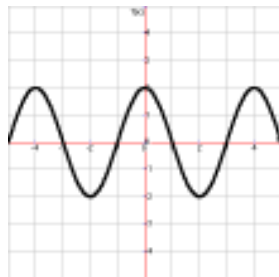
21. Write in terms of its reference angle.  $\cos -550^\circ$

22. Write the equation of the line with inclination  $40^\circ$  containing the point (3, 2). Give values to the nearest hundredth.

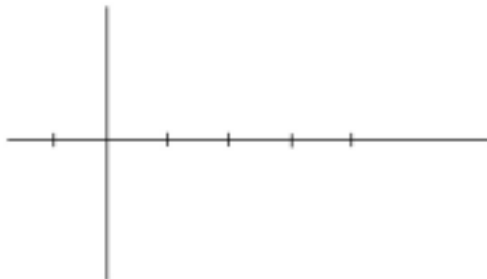
23. Find the angle of inclination for the line  $8x + 3y = 10$

Write an equation in the specified form for the graph shown .

24. as a sine function  
 25. as a cosine function.



26. Give the amplitude and period of  $y = 2 - 3 \cos 2\left(x - \frac{\pi}{2}\right)$ . Then sketch the graph.



Answers:

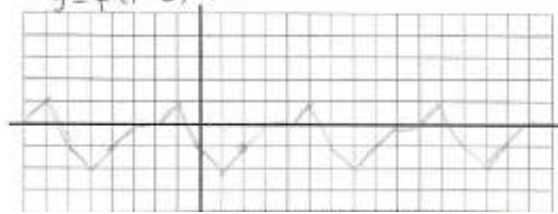
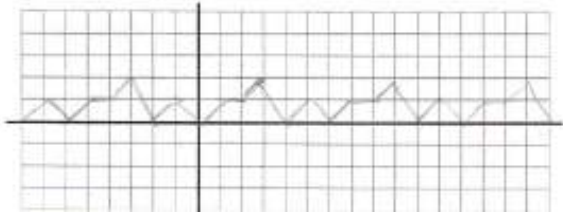
1. (-5, 11)      2. (8, 109)      3. (12, 13); (4, -6)      4. (16, 10); (4, 12)
5. a. X-axis: No      b. Y-axis: No      c. Origin: Yes      d.  $y = x$ : No

6.  $x \neq \pm 2$       7b.  $x > 2$  OR  $x < -2$       7c.  $x \geq 3$  OR  $x \leq 2$

- 7a. Period = 6      b. Amplitude = 3/2      c.  $f(3) = -1$       d.  $f(-70) = 2$

8.  $= |f(x)|$

9.  $y+1 = f(x-2)$  right 2 down 1  
 $y = f(x-2) - 1$



10.  $\frac{7\pi}{9}$       11.  $100^\circ$       12.  $\frac{5}{3}$  radians

13. arc length =  $\frac{12\pi}{5}$  in ; Area :  $\frac{54\pi}{5}$  in<sup>2</sup>

14.  $\sin \theta = \frac{12}{13}$ ;  $\csc \theta = \frac{13}{12}$ ;  $\cos \theta = -\frac{5}{13}$ ;  $\sec \theta = -\frac{13}{5}$ ;  $\tan \theta = -\frac{12}{5}$ ;  $\cot \theta = -\frac{5}{12}$       15.  $-\frac{3\sqrt{5}}{7}$

16a.  $\frac{\sqrt{3}}{2}$       b.  $\sqrt{2}$       c. 1      d.  $\frac{\sqrt{3}}{3}$       e.  $\frac{\sqrt{2}}{2}$       f.  $-\frac{2\sqrt{3}}{3}$

17a.  $\frac{2\pi}{3} = 120^\circ$       b.  $-\frac{\pi}{6} = -30^\circ$       c.  $\frac{\pi}{3} = 60^\circ$       d.  $\pi = 180^\circ$       e.  $-\frac{\pi}{2} = -90^\circ$       f.  $-\frac{\pi}{4} = -45^\circ$

18a.  $\frac{\sqrt{7}}{4}$       b.  $-\frac{\sqrt{73}}{8}$       c.  $-\frac{48}{55}$       d.  $-\frac{4}{3}$

19.  $245^\circ$  ;  $-475^\circ$       20.  $-\frac{3\pi}{4}$  ;  $\frac{5\pi}{4}$       21.  $-\cos 10^\circ$       22.  $y = 0.84x - 0.52$

23.  $110.6^\circ$       24.  $y = 2 \sin \frac{\pi}{2}(x+1)$       25.  $y = 2 \cos \frac{\pi}{2}x$

