

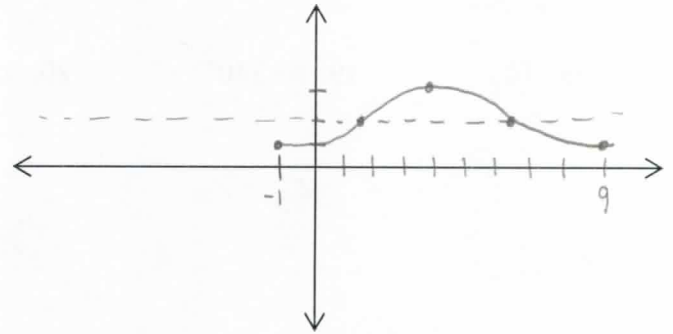
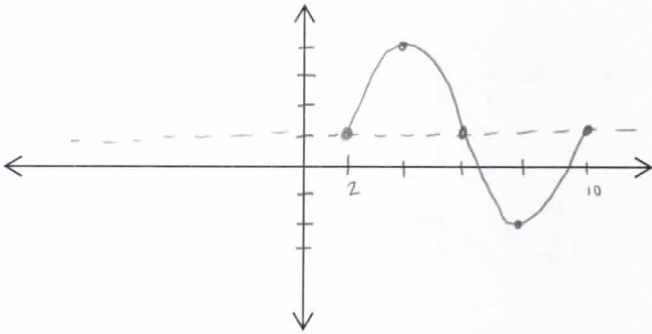
Graph the following functions, showing all critical values for one full cycle. Clearly label your axes.

↑1 →3 per 8 amp 2

↑2 ←1 per 10 reflect amp 1

1.  $y = 1 + 3\sin\frac{\pi}{4}(x-2)$

2.  $y = 2 - \cos\frac{\pi}{5}(x+1)$

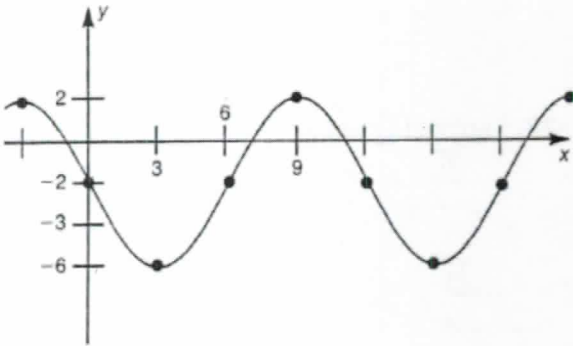


3. Write a cosine equation and a sine equation for the graphs below.

per=12

$y = -2 + 4\cos\frac{\pi}{6}(x+3)$

$y = -2 + 4\sin\frac{\pi}{6}(x-6)$



Find the exact value for the following:

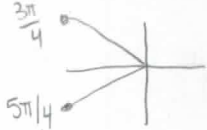
- |  |  |   |   |   |
|--|--|---|---|---|
| 4. $\sin(-150^\circ)$<br><u><math>-\frac{1}{2}</math></u>  | 5. $\sin^{-1}\left(\frac{\sqrt{2}}{2}\right)$<br><u><math>\frac{\pi}{4}</math></u> | 6. $\arccos\left(-\frac{1}{2}\right)$<br><u><math>\frac{2\pi}{3}</math></u> | 7. $\cos 60^\circ$<br><u><math>\frac{1}{2}</math></u> | 8. $\sec^{-1}(0)$<br><u>undefined</u>                     |
| 9. $\text{arccsc}(1)$<br><u><math>\frac{\pi}{2}</math></u> | 10. $\tan\frac{7\pi}{4}$<br><u>-1</u>  | 11. $\cos^{-1}(-2)$<br><u>undefined</u>                                     | 12. $\cot(90^\circ)$<br><u>0</u>                      | 13. $\sec^{-1}(-2)$<br><u><math>\frac{2\pi}{3}</math></u> |

$$14. \tan\left(\sin^{-1}\left(\frac{4}{9}\right)\right)$$



$$\frac{4}{\sqrt{65}} = \frac{4\sqrt{65}}{65}$$

$$15. \arccos\left(\cos\frac{5\pi}{4}\right)$$



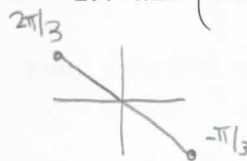
$$\frac{3\pi}{4}$$

$$16. \sin^{-1}\left(\cos\frac{\pi}{6}\right)$$

$$\sin^{-1}\left(\frac{\sqrt{3}}{2}\right)$$

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

$$17. \tan^{-1}\left(\tan\frac{2\pi}{3}\right)$$



$$-\frac{\pi}{3}$$

$$18. \sin^{-1}(0)$$

$$0\pi$$

$$19. \sin 240^\circ$$

$$-\frac{\sqrt{3}}{2}$$

$$20. \tan^{-1}(0)$$

$$0\pi$$

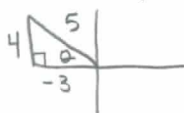
$$21. \sec\frac{3\pi}{4}$$

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

$$22. \cot^{-1}(-\sqrt{3})$$

$$\frac{5\pi}{6}$$

$$23. \sin\left(\arccos\left(-\frac{3}{5}\right)\right)$$



$$\frac{4}{5}$$

$$24. \sin^2(30^\circ) + \cos^2(30^\circ)$$

$$\left(\frac{1}{2}\right)^2 + \left(\frac{\sqrt{3}}{2}\right)^2$$

$$\frac{1}{4} + \frac{3}{4}$$

$$1$$

$$25. \csc(\arctan(-2))$$

$$-\frac{\sqrt{5}}{2}$$



$$26. \cot\left(\frac{2\pi}{3}\right)$$

$$-\frac{\sqrt{3}}{3}$$

$$27. \sec(\pi) - \tan\left(\frac{3\pi}{4}\right)$$

$$-1 - (-1)$$

$$0$$

$$28. \arcsin(1) + \cos\left(\frac{\pi}{2}\right)$$

$$\frac{\pi}{2} + 0$$

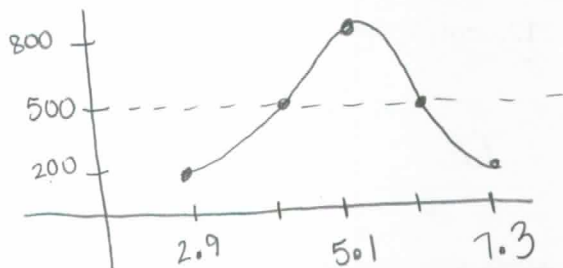
$$\frac{\pi}{2}$$

29. Find two angles that are coterminal to the given angle:

a.  $\theta = 150^\circ$   $\frac{510^\circ}{-210^\circ}$

b.  $\theta = \frac{4\pi}{5}$   $-\frac{6\pi}{5}, \frac{14\pi}{5}$

30. Naturalists find that the populations of some kinds of predatory animals vary periodically. Assume that the population of foxes in a certain forest varies sinusoidally with time. Records started being kept when time  $t = 0$  years. A minimum number, 200 foxes, existed when  $t = 2.9$  years. The next maximum, 800 foxes, occurred at  $t = 5.1$  years. Sketch the graph modeling the situation. Write the particular equation.



$$y = 500 - 300 \cos\frac{\pi}{2.2}(x - 2.9)$$

$$\frac{2\pi}{4.4} = \frac{\pi}{2.2}$$