Algebra 2 Review Chapter 13, Sec 14-1 Spring 2016

Round decimal answers to the nearest hundredth unless otherwise noted.

1. Find both a positive and a negative coterminal angle for the given angle. Give your answer in the same form as the original angle.

a) $-\frac{56\pi}{13}$ b) $752°$ c) $-1960°$ d) $\frac{18\pi}{7}$

2. Find the measure of an angle between $0°$ and $360°$ (0 to 2π) that is coterminal with each given angle. Give your answer in the same form as the original angle.

a) $745°$ b) $-395°$ c) $\frac{19\pi}{4}$ d) $\frac{-25\pi}{6}$

3. Convert each radian measure into degrees. Round to the nearest hundredth when needed.

a) $\frac{7\pi}{15}$ b) $\frac{13\pi}{8}$

4. Convert each degree measure into radians.

a) $600°$ b) $72°$

5. Use the unit circle to find the exact values of each.

a) $\sin 630°$ b) $\cos 510°$ c) $\tan\frac{2\pi}{3}$ d) $\cos\frac{10\pi}{3}$ e) $\sin(-30°)$ f) $\tan 9\pi$

g) $\tan 270°$ h) $\tan\frac{5\pi}{4}$ i) $\sin\frac{13\pi}{4}$ j) $\cos(-\frac{7\pi}{6})$ k) $\tan\frac{\pi}{6}$

6. State the amplitude and period of each function. Give the period in radians.

a) $y = 5\sin(8x)$ b) $y = 7\cos(\frac{1}{5}x)$

7. Graph one period of each. Label the coordinates of all maximums, minimums, and x-intercepts.

a) $y = 3\text{Sin}(3x)$ b) $y = -4\text{Cos}\left(\frac{x}{5}\right)$

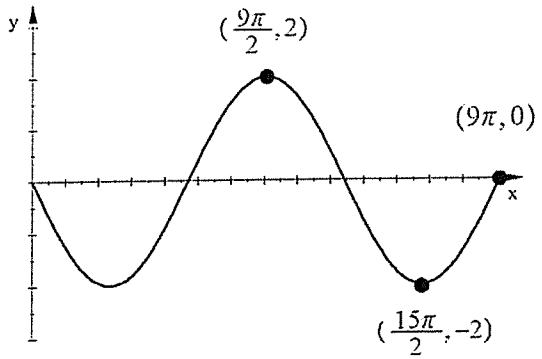
8. State the Phase Shift and the equation of the midline for each function.

a) $y = 6\sin(4(x - \frac{\pi}{4})) + 7$ b) $y = -3\cos(\frac{1}{4}(x + \pi)) - 2$

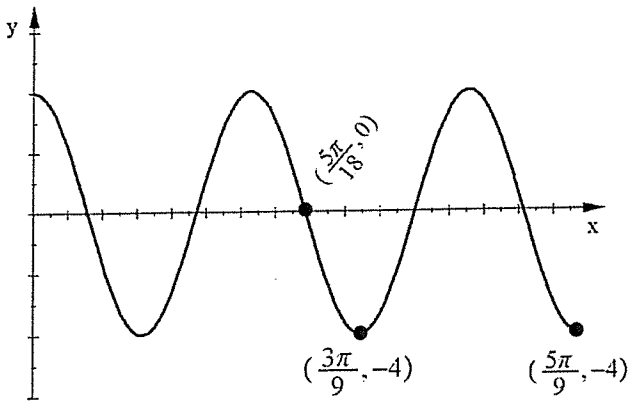
9. Graph one period of each. State the coordinates of all maximums, minimums, and x-intercepts.

a) $y = -5\text{Sin}(6(x - \frac{5\pi}{6})) + 2$ b) $y = 9\text{Cos}(7(x + \frac{\pi}{4})) - 5$

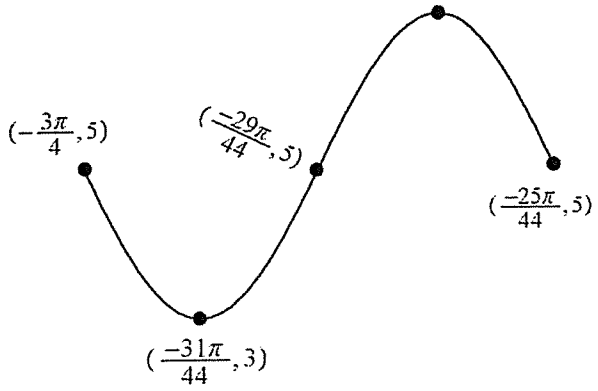
10. Write a Sin equation for this graph



11. Write a Cos equation for this graph.

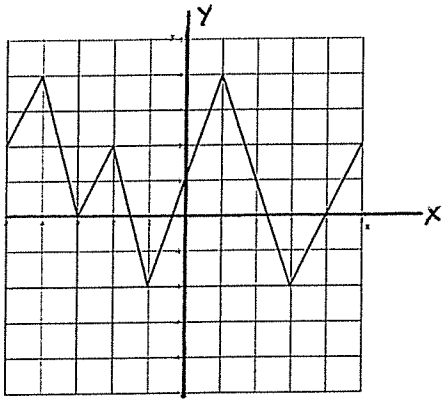


12. Write both a sine and cosine equation for this function.

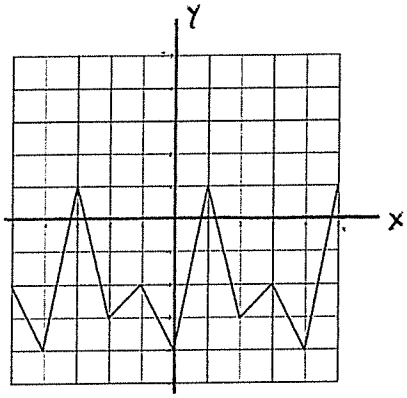


13. State if each function is periodic. If yes, state the amplitude, period, and eq for midline

a)



b)

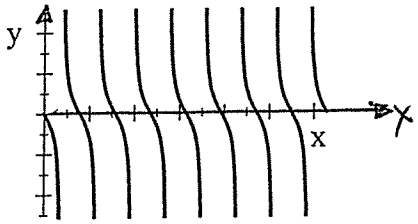


14. For each Tangent function find the period, give 3 Vertical Asymptotes, and give 3 x-intercepts.

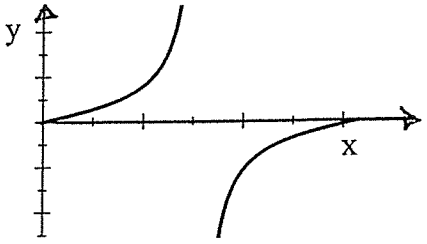
a) $y = -\text{Tan}(5x)$ b) $y = \text{Tan}\left(\frac{x}{3}\right)$

15. Write the equation for each Tangent Graph.

a) Window is from 0 to 6π.



b) Window is from 0 to 4π.



16. Given $\text{Tan}\theta = \frac{40}{9}$ find the other five trig ratios of θ.

17. Find the exact value of each.

a) $\csc\frac{4\pi}{3}$ b) $\cot 210°$ c) $\sec\frac{5\pi}{4}$

18. Find each to the nearest hundredth.

a) $\cot 78°$ b) $\sec\frac{3\pi}{7}$ c) $\csc(-75°)$

19. Simplify each trig expression.

a) $\cos\theta + \sin\theta\tan\theta$ b) $\frac{\cos\theta\csc\theta}{\cot\theta}$ c) $\frac{1+\tan\theta}{\tan\theta} - \cot\theta$ d) $\cos\theta\csc\theta(\sec^2\theta - 1)$

20. Verify each trig identity.

a) $\tan x + \cot x = \sec x\csc x$ b) $\frac{1}{\sec\theta\tan\theta} = \csc\theta - \sin\theta$

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1. Different answers are possible. Some examples are given.

a) *Pos* : $\frac{22\pi}{13}, \frac{48\pi}{13}, \ldots$ *Neg* : $\frac{-4\pi}{13}, \frac{-30\pi}{13}, \frac{-82\pi}{13}, \ldots$ b) *Pos* : $392°, 1112°, \ldots$ *Neg* : $-328°, -688°, \ldots$

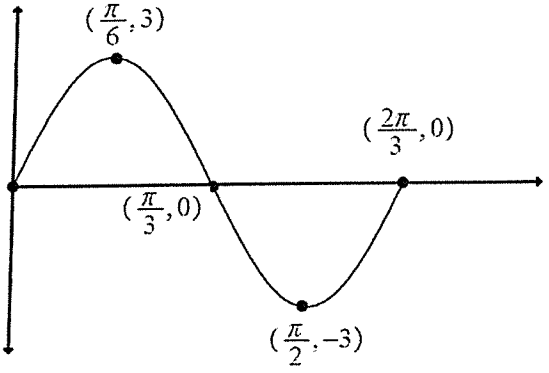
c) *Pos* : $200°, 560°, \ldots$ *Neg* : $-1600° - 2320°, \ldots$ d) *Pos* : $\frac{4\pi}{7}, \frac{32\pi}{7}, \ldots$ *Neg* : $\frac{-10\pi}{7}, \frac{-24\pi}{7}, \ldots$

2. a) $25°$ b) $325°$ c) $\frac{3\pi}{4}$ d) $\frac{11\pi}{6}$ 3. a) $84°$ b) $292.5°$ 4. a) $\frac{10\pi}{3}$ b) $\frac{2\pi}{5}$

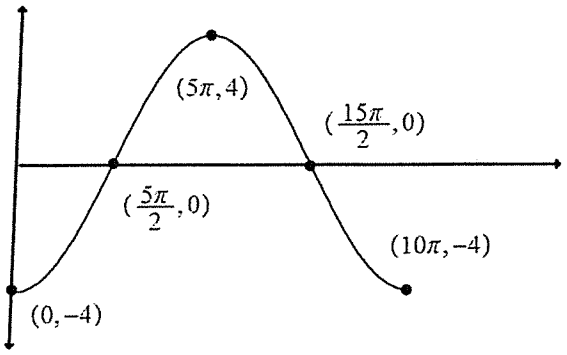
5. a) -1 b) $\frac{-\sqrt{3}}{2}$ c) $-\sqrt{3}$ d) $-\frac{1}{2}$ e) $-\frac{1}{2}$ f) 0 g) *Undefined* h) 1 i) $\frac{-\sqrt{2}}{2}$ j) $\frac{-\sqrt{3}}{2}$ k) $\frac{\sqrt{3}}{3}$

6. a) Amp= 5 Period= $\frac{\pi}{4}$ b) Amp= 7 Period= 10π

a)

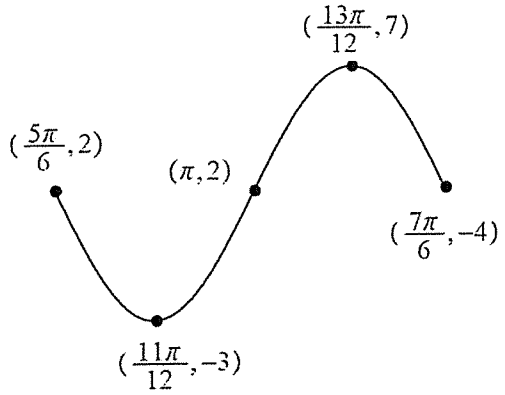


b)

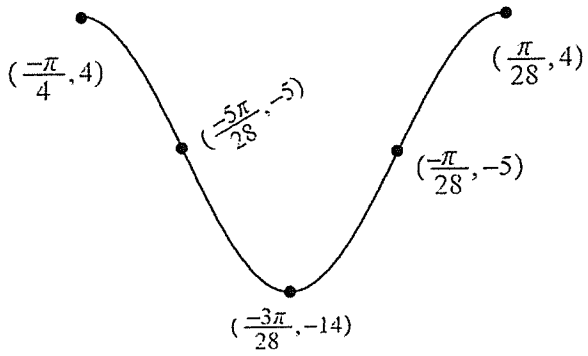


8. a) Phase Shift: $\frac{\pi}{4}$ right, Midline: $y = 7$ b) Phase Shift: π left, Midline: $y = -2$

9. a)



b)



10. $y = -2\text{Sin}\left(\frac{x}{3}\right)$ 11. $y = 4\text{Cos}9x$

12. Other answers are possible:

$y = -2\text{Sin}(11(x + \frac{3\pi}{4})) + 5$ $y = -2\text{Cos}(11(x + \frac{31\pi}{44})) + 5$

13. a) Not Periodic b) Periodic. Amp= 2.5, Period= 4, Midline: $y = -1.5$

14. a) Period= $\frac{\pi}{5}$, x-int: $x = 0, \frac{\pi}{5}, \frac{2\pi}{5}$ VA: $x = \frac{\pi}{10}, \frac{3\pi}{10}, \frac{\pi}{2}$

b) Period= 3π, x-int: $x = \frac{3\pi}{2}, \frac{9\pi}{2}, \frac{15\pi}{2}$

15. a) $y = -\text{Tan}\frac{4x}{3}$ b) $y = \text{Tan}\frac{x}{4}$

16. $\text{Cos}\theta = \frac{9}{41}$ $\text{Sin}\theta = \frac{40}{41}$ $\text{Sec}\theta = \frac{41}{9}$ $\text{Csc}\theta = \frac{41}{40}$ $\text{Cot}\theta = \frac{9}{40}$

17. a) $-\frac{2\sqrt{3}}{3}$ b) $\sqrt{3}$ c) $-\sqrt{2}$ 18. a) 0.21 b) 4.49 c) -1.04

19. a) $\sec\theta$ b) 1 c) 1 d) $\tan\theta$