Algebra 2 Review Chapter 13, Sec 14-1 Spring 2014

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) $530°$ b) $75°$ c) $-880°$ d) $\frac{5\pi}{3}$ e) $-\frac{19\pi}{8}$

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) $\frac{23\pi}{7}$ d) $-\frac{11\pi}{5}$

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

a) $\frac{7\pi}{12}$ b) $\frac{13\pi}{4}$ c) $\frac{5\pi}{6}$ d) $\frac{7\pi}{3}$ e) 8π

4. Convert each degree measure into radians. Leave answer in terms of π and as a fraction in reduced form.

a) $600°$ b) $-225°$ c) $72°$ d) $990°$

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) $\tan\frac{\pi}{6}$

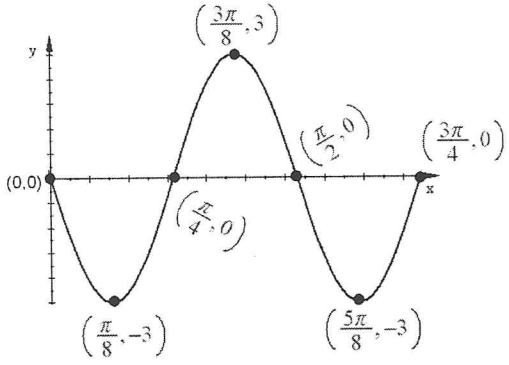
6. State the amplitude and period of each function. Give the period in radians.

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

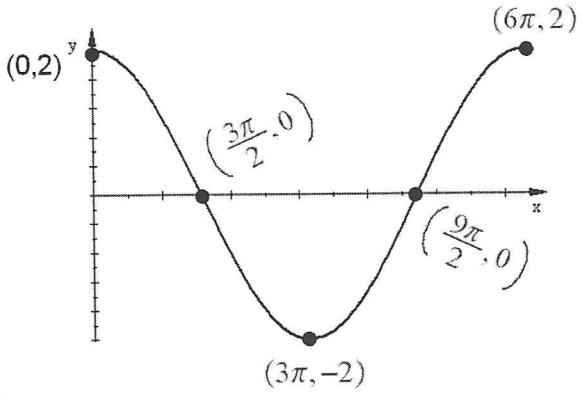
7. State the Phase Shift and the equation of the midline for each function.

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

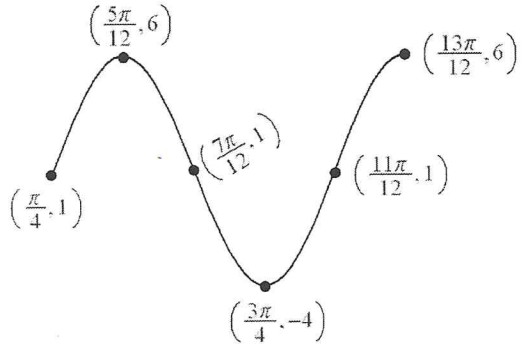
8. Write a Sin equation for this graph



9. Write a Cos equation for this graph.



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

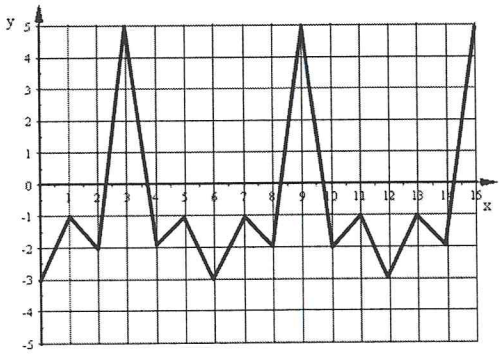


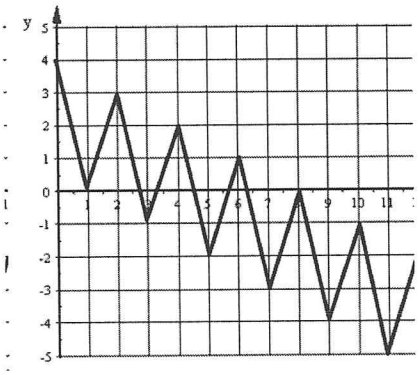
11. Graph one period of each. Label the coordinates of all maximums, minimums, and x-intercepts.

a) $y = 3\text{Sin}(7x)$ b) $y = -4\text{Cos}\left(\frac{x}{2}\right)$ c) $y = -7\text{Sin}(5(x + \frac{\pi}{6})) - 2$

12. State if each function is periodic. If yes, state the amplitude, period, and the equation of the midline.

a) b)

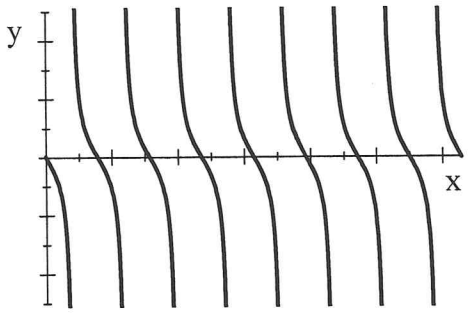




13. For each Tangent function find the period, give 4 Zeros, and give 4 Vertical Asymptotes.

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

14. Write the equation for this Tangent Graph. The window is from 0 to 2π.



15. Given $\text{Cot}\theta = \frac{15}{8}$ find the other five trig ratios of θ.

16. Find the exact value of each. a) $\csc\frac{4\pi}{3}$ b) $\cot 210°$ c) $\sec\frac{5\pi}{4}$

17. Find each to the nearest hundredth. a) $\cot 78°$ b) $\sec\frac{3\pi}{7}$ c) $\csc(-75°)$

18. Graph one period of each. State the coordinates of all Maximums and Minimums in the period and give the equations of the Vertical Asymptotes in the period.

a) $y = 5\text{Sec}x$ b) $y = -7\text{Csc}3x$

19. Simplify each trigonometric expression to a single trig function or a single number.

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

e) $(\tan\theta+\cot\theta)(\sin\theta)(\cos\theta)$ f) $\frac{\cos\theta\sec\theta}{\tan\theta}$ g) $(\sin^2\theta)(\cot\theta)(\csc\theta)$

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1. Different answers are possible. Examples are given.

a) $Pos: 170°$ $Neg: -190°$ b) $Pos: 435°$ $Neg: -285°$

c) $Pos: 200°$ $Neg: -160°$ d) $Pos: -\frac{\pi}{3}$ $Neg: \frac{11\pi}{3}$

e) Pos: $\frac{13\pi}{8}$ Neg: $\frac{-3\pi}{8}, \frac{-35\pi}{8}$

2. a) $25°$ b) $325°$ c) $\frac{9\pi}{7}$ d) $\frac{9\pi}{5}$

3. a) $105°$ b) $585°$ c) $150°$ d) $420°$ e) $1440°$

4. a) $\frac{10\pi}{3}$ b) $\frac{-5\pi}{4}$ c) $\frac{2\pi}{5}$ d) $\frac{11\pi}{2}$

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) Amplitude $= 5$ Period $= \frac{\pi}{4}$ b) Amplitude $= 7$ Period $= 10\pi$

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

8. $y = -3\sin 4x$ 9. $y = 2\cos(\frac{x}{3})$

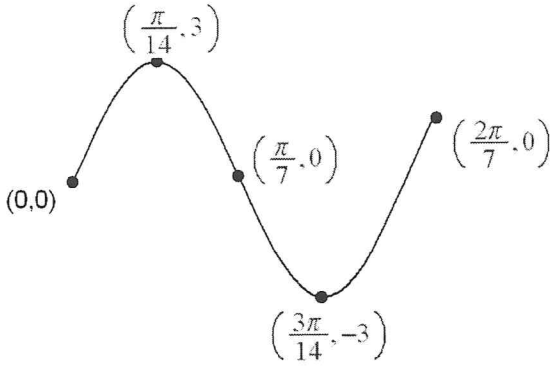
10. Different answers are possible. Below are answers using the given starting point.

Starting Point $(\frac{\pi}{4}, 1)$ $y = 5\sin(3(x-\frac{\pi}{4})) + 1$

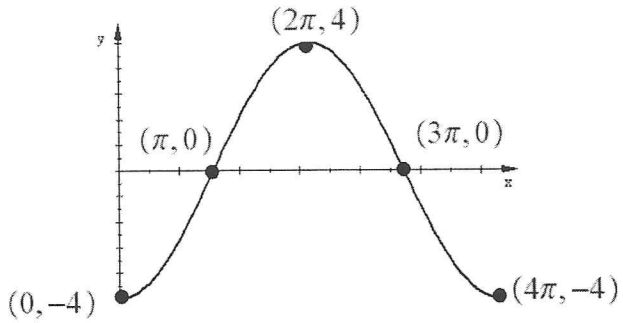
Starting Point $(\frac{5\pi}{12}, 6)$ $y = 3\cos(3(x-\frac{5\pi}{12})) + 1$

11.

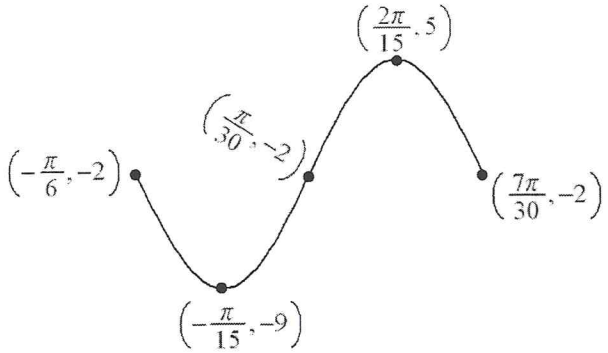
a)



b)



c)



12. a) Yes, it's periodic. Amp =4, Period=6, Midline: y=1 b) Not periodic

13. a) Zeros: $0,\pm\frac{\pi}{5},\pm\frac{2\pi}{5},\pm\frac{3\pi}{5}$ VA: $\pm\frac{\pi}{10},\pm\frac{3\pi}{10},\pm\frac{\pi}{2},\pm\frac{7\pi}{10}$

b) Zeros: $0,\pm3\pi,\pm6\pi,\pm9\pi$ VA: $\pm\frac{3\pi}{2},\pm\frac{9\pi}{2},\pm\frac{15\pi}{2},\pm\frac{21\pi}{2}$

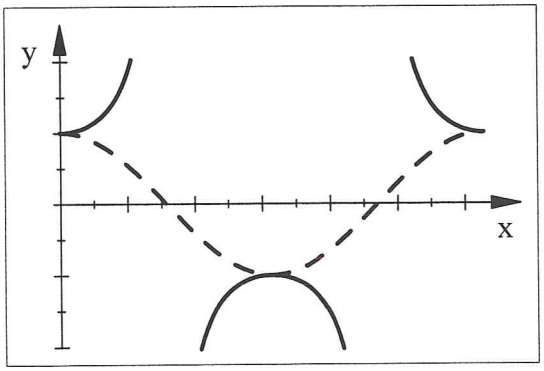
14. $y=-\tan(4x)$

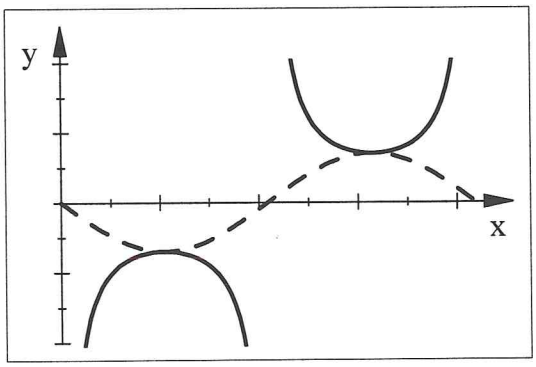
15. $\text{Tan}\theta=\frac{8}{15}$, $\text{Sin}\theta=\frac{8}{17}$, $\text{Cos}\theta=\frac{15}{17}$, $\text{Sec}\theta=\frac{17}{15}$, $\text{Csc}\theta=\frac{17}{8}$

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

18. a) Max $(\pi,-5)$ Min$(0,5),(2\pi,5)$ VA: $x=\frac{\pi}{2},\frac{3\pi}{2}$

b) Max $(\frac{\pi}{6},-7)$ Min$(\frac{\pi}{2},7)$ VA: $x=0,\frac{\pi}{3},\frac{2\pi}{3}$





19. a) $\tan\theta$ b) $\tan\theta$ c) 1 d) 1 e) 1 f) $\cot\theta$ g) $\cos\theta$