Alg 2 Final Exam Review Chapters 13&14 Spring 2019

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

a) $\frac{9\pi}{4}$ b) $\frac{17\pi}{6}$

2. Convert each degree measure into radians.

a) $780°$ b) $75°$

3. Find the exact values of each using the Unit Circle.

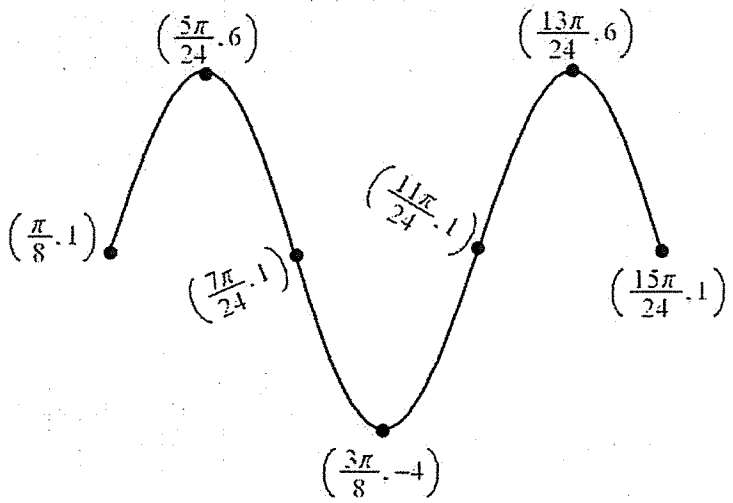
a) $\sin 810°$ b) $\cos(-450)°$ c) $\tan\frac{5\pi}{3}$ d) $\cos\frac{29\pi}{6}$ e) $\sin(-120°)$

f) $\cos 15\pi$ g) $\sin 270°$ h) $\tan\frac{7\pi}{6}$ i) $\cos\frac{3\pi}{4}$ j) $\tan 315°$

4. State the amplitude, period, equation of the midline, and phase shift of each function. Give the period and phase shift in radians.

a) $y = 9\sin\left(\frac{2}{3}(x+\frac{\pi}{6})\right) - 5$ b) $y = -2\cos\left(7(x-\frac{3\pi}{4})\right) + 8$

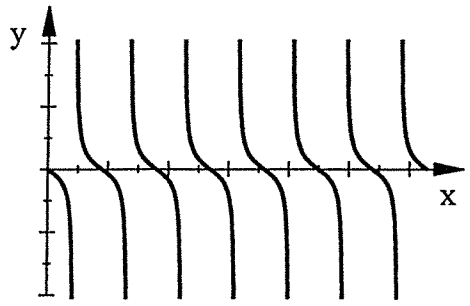
5. Write both a Sine and Cosine equation for this function.



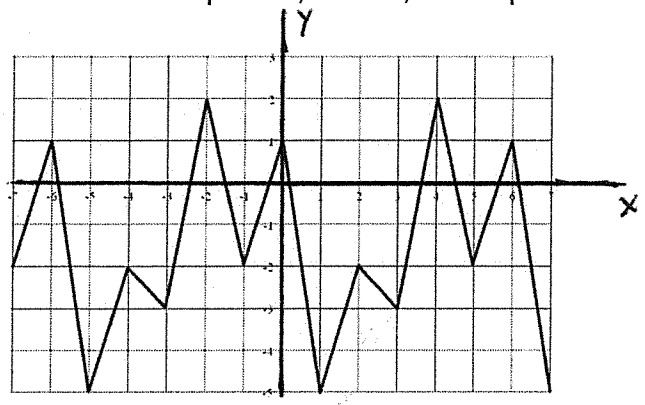
6. Find both a positive and a negative coterminal angle for each given angle. Give the answer in the same form as the original angle.

a) $\theta = 875°$ b) $\theta = \frac{27\pi}{8}$

7. Write the equation for this Tangent Function. The Window is 0 to 2π



8. State the Amplitude, Period, and Equation of the Midline for this periodic function.



9. Given $\text{Cot}A = \frac{5}{12}$ Find the remaining five trigonometric functions as ratios. Simplify fractions and rationalize denominators as needed.

10. Find the exact values of each using the Unit Circle.

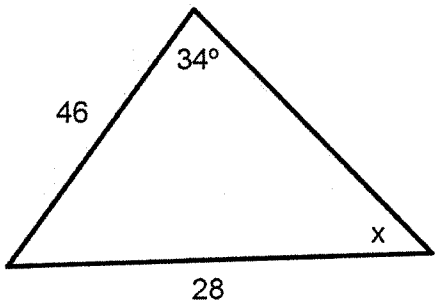
a) $\text{Sec}30°$ b) $\text{Csc}\frac{5\pi}{4}$ c) $\text{Cot}24\pi$

11. Simplify each trigonometric expression.

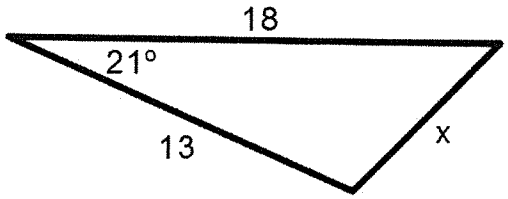
a) $\frac{\sec x - \cos x}{\tan x}$ b) $\frac{\sin x}{\csc x} + \frac{\cos x}{\sec x}$

12. Find the value of x to the nearest hundredth.

a)



b)



13. A 290 foot long wire supports a tall radio tower. The wire is connected to the top of the tower and is attached to an anchor in the ground 100 feet from the base of the tower. Find the angle the wire makes with the ground to the nearest tenth of a degree.

14. You are at the top of a 250 foot tall cliff and see a hiker on the ground with an angle of depression of $28°$. How far away from the cliff is the hiker? Round to the nearest foot.

15. You are sitting on the ground in a park and see a rare bird in a nearby tree with an angle of elevation of $53°$. If you are 70 feet from the tree how high up in the tree is the bird? Round to the nearest hundredth of a foot.

Alg 2 Final Exam Review Chs 13&14 Spring 2019 **Answers**

1. a) $405°$ b) $510°$ 2. a) $\frac{13\pi}{3}$ b) $\frac{5\pi}{12}$

3. a) 1 b) 0 c) $-\sqrt{3}$ d) $-\frac{\sqrt{3}}{2}$ e) $-\frac{\sqrt{3}}{2}$

f) -1 g) -1 h) $\frac{\sqrt{3}}{3}$ i) $-\frac{\sqrt{2}}{2}$ j) -1

4. a) Amp = 9, Period = 3π, Midline: $y = -5$, Phase shift: $\frac{\pi}{6}$ left
   b) Amp = 2, Period = $\frac{2\pi}{7}$, Midline: $y = 8$, Phase shift: $\frac{3\pi}{4}$ right

5. Possible answers are given:
Sine: $y = 5\text{Sin}6(x - \frac{\pi}{8}) + 1$ Starting Point $\left(\frac{\pi}{8}, 1\right)$
Cosine: $y = 5\text{Cos}6(x - \frac{5\pi}{24}) + 1$ Starting Point $\left(\frac{5\pi}{24}, 6\right)$

6. Some possible answers are given:
a) Pos: $155°, 515°, 1235°, \ldots$ Neg: $-205°, -565°, \ldots$
b) Pos: $\frac{11\pi}{8}, \frac{43\pi}{8}, \ldots$ Neg: $-\frac{5\pi}{8}, -\frac{21\pi}{8}, \ldots$

7. $y = -\tan\left(\frac{7x}{2}\right)$

8. Amplitude =3.5 Period=6 Midline: $y = -1.5$

9. $\text{Cos}A = \frac{5}{13}$ $\text{Sin}A = \frac{12}{13}$ $\text{Tan}A = \frac{12}{5}$ $\text{Sec}A = \frac{13}{5}$ $\text{Csc}A = \frac{13}{12}$

10. a) $\frac{2\sqrt{3}}{3}$ b) $-\sqrt{2}$ c) Undefined 11. a) $\sin x$ b) 1

12. a) $x = 66.73°$ b) $x = 7.49$ 13. $69.8°$ 14. 470 ft 15. 92.89 ft