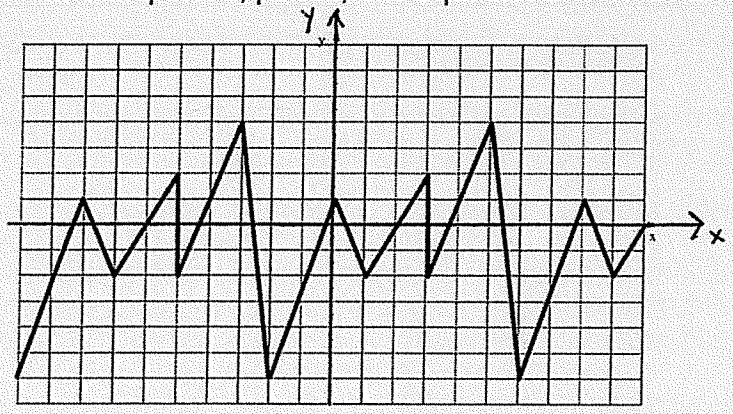
Alg 2B Final Exam Review Chapter 13 Spring 2018

Round decimal answers to the nearest hundredth unless noted otherwise. Give degree answers to the nearest hundredth and radian answers in reduced form and in terms of π.

1. Find the amplitude, period, and equation of the midline for this periodic function.



2. Find both a positive and a negative coterminal angle for the given angle. Give the answer in the same units as the given angle.

a) $1530°$ b) $-880°$ c) $\frac{48\pi}{7}$ d) $\frac{-26\pi}{3}$

3. Find the measure of an angle between $0°$ and $360°$ or between 0 and 2π that is coterminal with each given angle. Give the answer in the same units as the given angle.

a) $745°$ b) $-395°$ c) $\frac{-31\pi}{4}$ d) $\frac{73\pi}{6}$

4. 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

5. Convert each degree measure into radians.

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

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

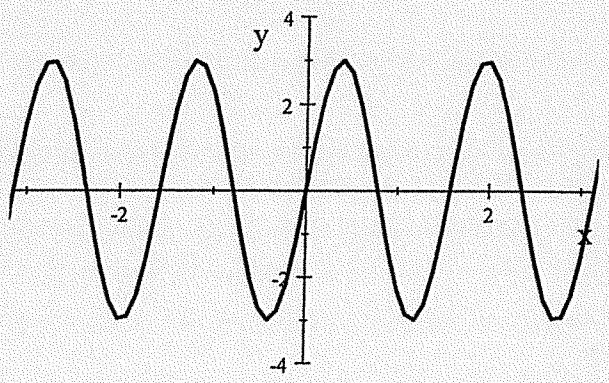
7. State the amplitude and period of each function. Give the period in radians.

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

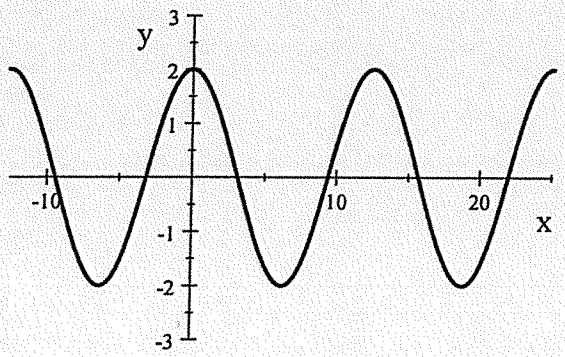
8. State the Phase Shift and the equation of the midline for each function.

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

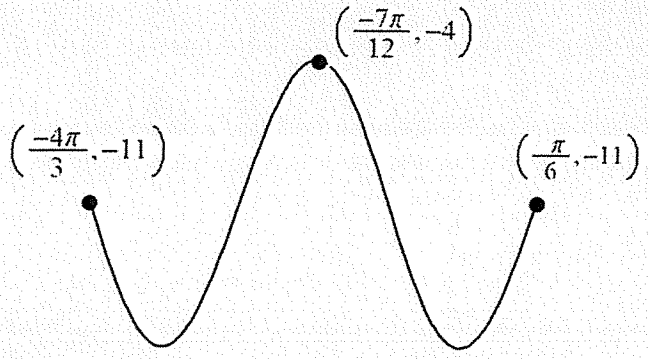
9. Write the equation of the graph below which is a transformation of $y = \sin x$. The window is from $-\pi$ to π.



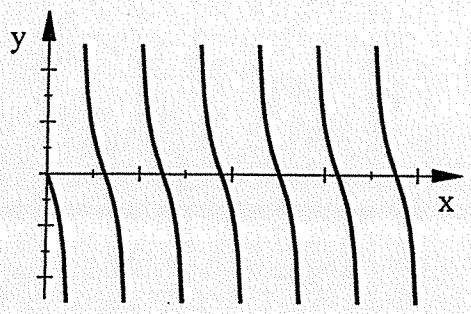
10. Write the equation of the graph below which is a tranformation of $y = \cos x$. The window is from -4π to 8π.



11. Write the equation of the graph below as both a Sin and a Cos equation.



12. Write the equation for this Tangent Function. The window is 0 to 5π



13. Give 5 x-intercepts and 5 VA for this function: $y = \text{Tan}\frac{3x}{7}$

14. A wire supporting a radio tower is connected to the top of the tower and is anchored in the ground 100 feet from the base of the tower. If the wire makes a $65°$ angle with the ground find the length of the wire to the nearest tenth of a foot.

15. You are at the top of a cliff and see a hiker on the ground with an angle of depression of $28°$. If the hiker is 250 feet away from the base of the cliff, how tall is the cliff? Round to the nearest whole foot.

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1. Amplitude $= 5$ Period $= 8$ Midline: $y = -1$
2. a) Pos: $90°, 450°, 810°, 1170°, 1890°, \ldots$
   Neg: $\ldots -1350°, -990°, -630°, -270°$

   b) Pos: $200°, 560°, 920°, \ldots$
   Neg: $\ldots -1600°. -1240°, -520°, -160°$

   c) Pos: $\frac{6\pi}{7}, \frac{20\pi}{7}, \frac{34\pi}{7}, \frac{62\pi}{7}, \frac{76\pi}{7}, \ldots$
   Neg: $\ldots \frac{-36\pi}{7}, \frac{-22\pi}{7} \frac{-8\pi}{7}$

   d) Pos: $\frac{4\pi}{3}, \frac{10\pi}{3}, \frac{16\pi}{3}, \frac{22\pi}{3}, \ldots$
   Neg: $\ldots, \frac{-38\pi}{3}, \frac{-32\pi}{3}, \frac{-20\pi}{3}, \frac{-14\pi}{3}, \frac{-8\pi}{3}, \frac{-2\pi}{3}$

3. a) $25°$ b) $325°$ c) $\frac{\pi}{4}$ d) $\frac{\pi}{6}$
4. a) $105°$ b) $585°$ c) $150°$ d) $420°$ e) $1440°$
5. a) $\frac{10\pi}{3}$ b) $\frac{-5\pi}{4}$ c) $\frac{2\pi}{5}$ d) $\frac{11\pi}{2}$
6. 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) $\frac{\sqrt{3}}{3}$
7. a) Amplitude $= 5$ Period $= \frac{\pi}{4}$ b) Amplitude $= 7$ Period $= 10\pi$

8. a) Phase Shift: $\frac{\pi}{4}$ right Midline: $y = 7$
   b) Phase Shift: π left Midline: $y = -2$
9. $y = 3\sin 4x$
10. $y = 2\cos(\frac{x}{2})$
11. Sine EQ: starting at $\left(\frac{-4\pi}{3}, -11\right) \rightarrow y = -7\text{Sin}(2(x + \frac{4\pi}{3})) - 11$
    Cosine EQ: starting at $\left(\frac{-7\pi}{12}, -4\right) \rightarrow y = 7\text{Cos}(2(x + \frac{7\pi}{12})) - 11$
12. $y = -\text{Tan}\frac{13x}{10}$
13. x-int: $x = 0, \pm\frac{7\pi}{3}, \pm\frac{14\pi}{3}$ VA: $x = \pm\frac{7\pi}{6}, \pm\frac{21\pi}{6}, \frac{35\pi}{6}$

14. 236.6 feet
15. 133 feet