Pre-Calculus 12  
**Practice Test**

1. If each angle is in standard position, in which quadrant does it terminate?
   1. 100⁰
   2. 500⁰
   3. 10
   4. 29π/6
2. Convert each degree measure to radian measure and each radian measure to degree measure. Give answers as approximate values to the nearest hundredth when necessary.
   1. 20⁰
   2. -185⁰
   3. -1.75
   4. 5π/12
3. Determine the measure of an angle coterminal with each angle in the domain 0⁰≤θ<360⁰ or 0≤θ<2π.
   1. 6.75
   2. 400⁰
   3. -3
   4. -105⁰
4. P(θ)=(x,y) is the point where the terminal arm of an angle θ intersects the unit circle. What are the coordinates for each point?
   1. P(5π/6)
   2. P(-150⁰)
   3. P(-11π/2)
   4. P(45⁰)
   5. P(120⁰)
   6. P(11π/3)
5. Identify all measures for θ in the interval -2π≤ θ<2π such that P(θ) is the given point.
   1. (0,1)
   2. (√3/2,-1/2)
   3. (-1/√2,1/√2)
   4. (-1/2,√3/2)
6. If Cos θ=1/3, 0⁰≤ θ≤270⁰, what is the value of each of the other trigonometric ratios of θ? When radicals occur, leave your answer in exact form.
7. Without using a calculator, determine the exact values of each trigonometric ratio.
   1. Sin(-3π/2)
   2. Cos(3π/4)
   3. Cot(7π/6)
   4. Sec(-210⁰)
   5. Tan(720⁰)
   6. Csc(300⁰)
8. Write the equation of the Cosine function in the form y=aCosbx with the given characteristics.
   1. Amplitude 3, Period π
   2. Amplitude 4, Period 150⁰
   3. Amplitude 1/2, Period 720⁰
   4. Amplitude 3/4, Period π/6
9. Write the equation of the Sine function in the form y=aSinbx with the given characteristics.
   1. Amplitude 8, Period 180⁰
   2. Amplitude 0.4, Period 60⁰
   3. Amplitude 3/2, Period 4π
   4. Amplitude 2, Period 2π/3
10. Determine the amplitude, period, phase shift and vertical displacement with respect to y=Sinx or y=Cosx for each function. Sketch the graph of each functions for two cycles.
    1. y=2Cos3(x-π/2)-8
    2. y=Sin1/2(x-π/4)+3
    3. y=-4Cos2(x-30⁰)+7
    4. y=1/3Sin1/4(x-60⁰)-1
11. Write the equation for each graph in the form y=aSinb(x-c)+d and in form y=aCosb(x-c)+d.
12. a) Write the equation of the Sine function with amplitude 4, period π, phase shift π/3 units to the right and vertical displacement 5 units down.

b) Write the equation of the Cosine function with amplitude 0.5, period 4π, phase shift π/6 units to the left and vertical displacement 1 unit up.

c) Write the equation of the Sine function with amplitude 2/3, period 540⁰, no phase shift, and vertical displacement 5 units down.

1. Using the language of transformations, describe how to obtain the graph of each function from the graph of y=Sinx or y=Cosx.
   1. y=3Sin2(x-π/3)+6
   2. y=-2Cos1/2(x+π/4)-3
   3. y=3/4Cos2(x-30⁰)+10
   4. y=-sin2(x+45⁰)-8
2. a) Graph y=Tan θ for -2π≤ θ≤2π

b) Determine the following characteristics.

i) Domain

ii) Range

iii) y-intercept

IV) x-intercepts

v) Equations of the asymptotes

1. the number of hours of daylight, L, in Lethbridge, Alberta maybe modeled by a sinusoidal function of time, T. The longest day of the year is June 21st with 15.7 hours of daylight and the shortest day is December 21st with 8.3 hours of daylight.
   1. Determine a sinusoidal function to model the situation
   2. How many hours of daylight are there on April 3rd?
2. For several hundreds of years astronomers have kept track of the number of solar flares, or sunspots, that occur on the surface of the sun. The number of sunspots counted in a given year varies periodically from a minimum of 10 per year to a maximum of 110 per year. There have been 18 complete cycles between the years 1750 and 1948. Assume that a maximum number of sunspots occurred in the year 1750.
   1. How many sunspots would you expect there were in the year 2000?
   2. What was the first year after 2000 in which the number of sunspots will be about 35?
   3. What is the first year after 2000 in which the number of sun spots will be a maximum?