INSTRUCTIONS: Do all work on the worksheets I am providing. Also put your answer on the worksheet. And box the answer. Do no more than four (4) problems per sheet on your worksheets. Draw a horizontal line between each problem on the worksheet. Do not write in the left or top margins of your worksheets except to number your pages. Show all work.

#Bonus (10 points) Complete the chart. Do your work on this page. Give exact answers.

<table>
<thead>
<tr>
<th>θ</th>
<th>sin θ</th>
<th>cos θ</th>
<th>tan θ</th>
<th>csc θ</th>
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========== DO ALL REMAINING WORK & ANSWERS ON THE WORKSHEETS ==========

#1 Find the missing coordinate of P using the fact the P lies on the unit circle in the given quadrant. Give EXACT answers. Show work.

[A] \( P\left(\_, \frac{-2}{3}\right) \) Q III
[B] \( P\left(\frac{4}{9}, \_\right) \) Q IV

#2 [A] Find the reference number \( \bar{t} \) for \( t \), and

[B] find the terminal point \( P \) determined by \( t \), if \( t = \frac{5\pi}{3} \). Show work on part [B].

#3 (9 pts) Find the EXACT value of the trig function at the given real number.

[A] \( \sin\left(\frac{7\pi}{6}\right) \)  [B] \( \cos\left(\frac{7\pi}{6}\right) \)  [C] \( \tan\left(\frac{7\pi}{6}\right) \)

#4 (9 pts) Find the values of all 6 trig functions of \( t \) if \( \tan t = \frac{1}{4} \) and the terminal point of \( t \) is in Q III.
#5 Write the first expression in terms of the second if the terminal point determined by \( t \) is in the given quadrant. \( \sin t, \ \cos t, \ QII \).

#6 (9 pts) The terminal point \( P(x, y) \) determined by a real number \( t \) is given. Find \( \sin t, \ \cos t, \ \tan t \).

\[
P \left( \frac{6}{7}, \frac{\sqrt{13}}{7} \right)
\]

#7 Find the amplitude and the period of each function. Show formulas used. Show work.

[A] \( f(x) = 5 \cos \left( \frac{x}{4} \right) \) 

[B] \( f(x) = -3 \sin (\pi x) \)

#8 Find the amplitude, period and phase shift. Show formulas and work. \( y = 6 \cos \left( 3x - \frac{\pi}{4} \right) \).

#9 (9 pts) 

[A] State Heron’s formula, and

[B] Use Heron’s formula to find the area of this triangle. (Show calculator approximation to eight decimal places, then round off your final answer to the nearest whole cm\(^2\)).

#10 Towns A, B and C are situated as shown. What is the distance, \( a \), between B and C? Show work. Give calculator approximation to eight decimal places, and then round off to the nearest tenth of a mile.
#11

Use the Law of Cosines to find $\theta$. Give answer in degrees. First give calculator approximation to eight decimal places, then round off to the nearest tenth of a degree.

#12

Use the Law of Sines to find $x$. First give calculator approximation to eight decimal places, then round off to the nearest tenth of a meter.