

Math 1113 Test #2**Part 1: No calculator allowed.**

1. Find the exact values: a) $\cot \frac{3\pi}{4}$ b) $\csc 120^\circ$ c) $\cos (-150^\circ)$ d) $\sec \frac{3\pi}{2}$
2. The graph of a function of the form $a \cos(bx+c)$ is pictured. Give a numerical estimate of the amplitude of this function.
3. Graph $\sin(x/3)$ on the interval $[0, 8\pi]$. Put the scale on both axes.
4. What is the period of a) $\tan 10x$? b) $\sec x/5$?

Part II Calculator allowed

5. a) Sketch the graph of $5 \cos(2x - \frac{\pi}{2})$ on $[0, 2\pi]$. Put the scale on both axes.
b) What is the phase shift? c) What is the amplitude? d) What is the period?
e) Give the x-intercepts between 0 and 2π (inclusive).
6. Solve the equation $\csc x = 1.25$ on the interval $[0, \pi]$. Give a decimal solution to 2 decimal places.
7. In a certain town, the daily demand $D(t)$ for electricity is given by the function
 $D(t) = 20 \sin\left(\frac{\pi}{12}t + \frac{\pi}{2}\right) + 30$, where t is time in hours (with $t=0$ being midnight) and $D(t)$ is measured in megawatts.
a) Give a rough sketch of $D(t)$. Your sketch only needs to be good enough to answer part b)
b) At what time of day is the demand for electricity greatest? Give your answer in clock time, e.g. 2 AM
8. ABC is a triangle with sides $a = 60$, $b = 85$, $c = 42$. Find the largest angle in this triangle. Give your answer to the nearest degree.
9. Find angles C and B and side c for the triangle pictured. Give your answers to the nearest degree or unit.
10. A surveyor wants to find how far it is from town X to town Y, but she can't measure the distance directly. From point A to X is 7 miles, and from point A to Y is 11 miles. If angle XAY is 117° , how far is it from X to Y?