Math 121 **Problem Set #10 on Chapter 10** **C. S. Davis**

Name: _____

1. For each of the trigonometric functions below, give the amplitude, period, (horizontal) displacement, vertical displacement and phase angle. Then graph at least two cycles of the function labeling both axes with numbers and each of the items above (except phase angle) on the graph.

   a. $y = 3 \cos (6t)$

   b. $y = 170 \sin (60 \cdot 2\pi t)$

1. (Continued)

   c. $y = 5 \cos (4t-\pi)+3$

   d. $10 \sec (3t + \pi/2)$

2. Sketch two cycles of the acoustical intensity I of the sound wave fro which $I = A\cos(2\pi ft-\alpha)$, given that t is in seconds, $A = 0.027\ W/cm^2$, $f = 240$ Hz, and $\alpha = 0.80$.

3. For a point on a vibrating string, the displacement y is given by the equation, $y = A\sin(t/T - x/\lambda)$. sketch two cycles of y as a function of t for these given values.
A=1.40 in T=0.25 s λ=24.0 in x=20.0 in

4. Display two cycles of this composite trig function using the graphing calculator (and, of course, transfer the graph to the paper with the axes labeled with numbers).

   $y = 3 \sin (2x) - 5 \cos (3x)$

5. Display the Lissajous figure for these parametric functions using the graphing calculator (and, of course, transfer the graph to the paper with the axes labeled with numbers).

   $x = 2 \sin (2\pi t)$ $y = 3 \sin (3\pi t)$