Name _____ Instructor _____

Technical Calculus (I)
Math 210 - Test 1
September 21, 1998

**You must show all relevant work to receive full credit. The point value of each problem is shown in the left hand margin.**

**(10)** 1. Three vertices of a rectangle are (5,2), (-1,2) and (-1,4). What are the coordinates of the fourth vertex?

**(10)** 2. The velocity $v$, in feet per second, of an object under the influence of gravity, in terms of the time $t$ in seconds, is given by $v = 100 - 32t$. If the object strikes the ground after $4s$, graph $v$ versus $t$.

**(10)** 3. Determine the value of $k$, knowing that the distance between $(-1, 3)$ and $(11, k)$ is 13.

**(10)** 4. Reduce the equation to *slope-intercept form* and determine the slope and $y$-intercept.

$$3x - 2y - 1 = 0$$

**(10)** 5. Find the equation of the circle tangent to both axes, of radius 4, and in the third quadrant.

**(10)** 6. Find the equation of the circle with center at $(2, 1)$ and passing through the point $(-4, 1)$.

**(10)** 7. Find the equation of the parabola with focus at $(-2, 0)$ and directrix $x = 2$.

**(10)** 8. Find the coordinates of the vertices and foci of the given ellipse. Sketch its graph.

$$4x^2 + 25y^2 = 25$$

**(10)** 9. Find the coordinates of the vertices and foci of the given hyperbola. Sketch its graph.

$$4x^2 - 9y^2 = 16$$

**(10)** 10. Describe the locus of the given equation. Identify the type of curve and its center (vertex if it is a parabola). Sketch its graph.

$$\frac{(x+4)^2}{4} + \frac{(y-1)^2}{1} = 1$$