Mathematics 1220 Calculus II

Examination 4, Thursday, Saturday, November 20,22

WARNING: You may use calculators, but you must show enough work to convince me that you can do the problem.

1. Consider the conic given by the equation $4x^2 - 24x + 9y^2 + 18y + 9 = 0$.
a) What kind of conic is it?

b) Give the coordinates of its vertex/vertices.

c) Give the coordinates of its focus/foci.

2. Consider the conic given by the equation $4x^2 - 24x + 9y + 18 = 0$.
a) What kind of conic is it?

b) Give the coordinates of its vertex/vertices.

c) Give the coordinates of its focus/foci.

3. Find the equation of the hyperbola whose vertices are at (-3,0), (3,0) and which goes through the point (6,6).

4. Find the length of the spiral $r = e^{2\theta}$ from $\theta = 0$ to $\theta = 2\pi$.

5. Find the area enclosed by the limaçon $r = 3 + 2\sin\theta$.