Warm-Up Problems and Lecture Problems
February 19, 2003

1. Find the area trapped between the curves:

   (a) $y = x^2$ and $y = 2 - x^2$

   (b) $x = y^2 - 1$ and $x = 1 - y^2$

Lecture Problems

2. Verify the solutions to the following differential equations. Determine the order of each differential equation.

   (a) $y' = 3x^2$; $y = x^3 + 7$

   (b) $y'' + 4y = 0$; $y = \cos 2x$

   (c) $y' = y + 2e^{-x}$; $y = e^x - e^{-x}$

   (d) $y' + 2xy^2 = 0$; $y = \frac{1}{1+x^2}$.

3. For the slopefield below, sketch several possible solution curves.

4. For the slopefield below, sketch solutions satisfying (one curve for each subpart):

   (a) $y(0) = 0$

   (b) $y(1) = 1$

   (c) Can you find some curves that exhibit "different behavior?"

5. For the slopefield below, sketch solutions satisfying (one curve for each subpart):

   (a) $y(0) = 0$

   (b) $y(1) = 1$

   (c) Can you find some curves that exhibit "different behavior?"

6. For the slopefield below, sketch solutions satisfying (one curve for each subpart):

   (a) $y(0) = 0$

   (b) $y(1) = 1$

   (c) Can you find some curves that exhibit "different behavior?"