

**MAT 2384 3X    Assignment # 1**  
**due Wednesday, May 18th**

Solve the following initial value problems:

1.  $y' = 2x\sqrt{1-y^2}, \quad y(0) = 1$
2.  $(2x \cos y + y^2) dx + (2xy - x^2 \sin y) dy = 0, \quad y(1) = \pi$
3.  $(2x + 1) dx + (4y + 2) dy = 0, \quad y(1) = 1$
4.  $(x + 2y) dx - x dy = 0, \quad y(1) = 5$
5.  $((x + 1) \ln y - y^2) dx + (x/y - 2y) dy = 0, \quad y(0) = \sqrt{2}$
6.  $(2xy^2 - y - 2y \sin x) dx + (6 \cos x + 4x^2y - 3x) dy = 0, \quad y(0) = 2$
7. Use fixed point iteration to find the root of  $f(x) = x^3 + 8x - 7$  in  $[0, 1]$  to 5 decimal places. Start with  $x_0 = 0.75$ .