MATH 221, EXAM # 2

YOUR NAME

T.A.'s NAME

DISC. SEC. (time)

Show all your work. No calculators or references.

1.(20pts)
2.(20 pts)
3.(20 pts)
4.(20 pts)
5.(20 pts)
Total

1. A curve in the (x,y) plane is described by $y^4 + x\,y^3 = 2$.

Find the equation of the line tangent to the curve at the point (1,1).

2. A ladder 10 ft. long rests against a vertical wall. If the bottom of the ladder slides away from the wall at the rate of 1 ft/sec, how fast is the top of the ladder sliding down the wall when the bottom of the ladder is 6 ft from the wall?

3. Use differentials to estimate the value of $\sqrt{82}$.

4. Find two positive numbers whose product is 100 and whose sum is a minimum.

5. Find the solution of

$$\frac{dy}{dx} = \frac{(x^3 + 1)^3 x^2}{y^2}$$

satisfying the condition $y = 2$ when $x = -1$.