MATH 0220 EXAM II NAME_____

1. Differentiate each of the following. It's not necessary to simplify your answers.

(a) $f(x) = \dfrac{3}{\sqrt{1+x+3x^2}}$

(b) $s(t) = \arctan(2t)$

(c) $y = \dfrac{\tan x}{1+\cos x}$

(d) $g(x) = \ln(x + e^{-3x})$

(e) $f(x) = \dfrac{5}{(x^2-4)^3}$

(f) $y = x^{\cos x}$

2. (a) Determine the equation of the tangent line to the curve:
$x^2 \sin y + 3x + 2y = 6$ at the point $(2, 0)$.

(b) Use your answer in part (a) to approximate y when $x = 2.4$

3. Find the point(s) on the parabola $y = x^2$ that is (are) closest to the point $(0, 1)$.