MATH 1523 CALCULUS I Worksheet 1 Name:
PROF. PAUL BAILEY March 4, 2004

Problem 1. Find $\frac{dy}{dx}$.

(a) $y = (x^2+1)(x^2-1)(x^2+2)^{-1}$;

(b) $y = \sqrt[3]{x}\sin(x)\cos(x)$;

(c) $y = \arctan(\sqrt{\sin x})$;

(d) $x(t) = \sec t$, $y(t) = \tan t$;

(e) $x^3 + y^3 = xy$;

(f) $\cos y = x$.

Problem 2. Find the equation of the line tangent to the curve $y^2 = x^3 - 2x + 4$ at the point $(3, 5)$.

Problem 3. Let $f(x) = ax^2$, where $a > 0$. Find the value of a such that the line $y = x - 1$ is tangent to the graph of $f(x)$, and state the point of tangency.