

Math 155 Worksheet 7

Name:

ID:

1. In each of the problem below, compute the derivative of the given function, and do not simplify your answers.

(a) $f(t) = (x^2 + 1)\sqrt[3]{x^2 + 4}$.

(b) $g(u) = u^2 \sin(\sqrt{u}) + \pi^3$.

(c) $g(u) = \sin(\sin(\sin(u)))$.

2. If $f(x) = x \sin(x)$, find $f^{(4)}(x)$. From what you have computed to get $f^{(4)}(x)$, can you guess a formula for $f^{(n)}(x)$ for any integer $n \geq 1$? (Exercise your imagination. Points will NOT be deducted if you guess wrong).

3. Given $1 + x = \sin(xy^2)$, find dy/dx .

4. Find an equation of the tangent line to the curve $x^2 + xy + y^2 = 7$ at $(1, 2)$.

5. Find y'' by implicit differentiation, given $x^3 + y^3 = 1$.

6. Find all the points on $x^2y^2 + xy = 2$ where the slope of tangent line is -1 .