

Math 165 (Chris Kurth)
Spring 2008
Quiz 5

Show all work. Answers without work will not receive credit.

1. (6 points) Find the second derivative of

$$f(x) = \sqrt[3]{x} + \sqrt{x} + x + 1$$

2. (7 points) A snowball in the shape of a sphere is melting so that the radius is decreasing at a uniform rate of 1 centimeter per second. How fast is the volume decreasing when the radius equals 6 centimeters?

3. (7 points) Using implicit differentiation, find $D_x y$ (also called $\frac{dy}{dx}$), where:

$$x^2 y^2 + 4xy = 12y$$

4. (Bonus) Find the equation of the tangent line to the curve from part 3 at $(2,1)$.