## Name: \_\_\_\_\_\_ Math 151 Calculus I – Crawford

Books, notes (in any form), and calculators are allowed. But you must *show all your work*. You are allowed to work with each other, but you cannot get help from me or the tutors. Good Luck!

[If you got a 12 or higher on the original Quiz 3, you automatically get extra points and cannot turn in the Re-Do Quiz. If you got a grade lower than 12, you may do this optional Re-Do Quiz. I will take the average of the original Quiz 3 and the Re-Do quiz for your new grade (or keep the original grade, if it is higher than the average).]

**1.** (4 pts) Find an equation of the tangent line to  $y = \sqrt{2x+1}$  at x = 4.

**2.** (3 pts) Find the derivative of  $y = \sin^3(1 + 4\theta^2)$ .

**3.** (5 pts) Find dy/dx by implicit differentiation.

$$x^2y^3 - 3y = \tan(y) + \cos(x)$$

4. (3 pts) Newton's Law of Gravitation says that the magnitude F of the force exerted by a body of mass m on a body of mass M is

 $F = \frac{GmM}{r^2}$  where G is the gravitational constant and r is the distance between the two bodies.

Find  $\frac{dF}{dr}$  and (in one sentence) explain its meaning.