Name: ______ Math 152 Calculus II – Crawford

Books, notes (in any form), and calculators are not allowed. *Show all your work*. Good Luck! [Scores will be scaled to 15 points after grading.]

1. (4 pts) Differentiate the following functions.

[Do not simplify.]

(a).
$$y = 3x^2 + 2^{3x}$$
 (b). $f(x) = \frac{\cosh x}{x^2}$

2. (5 pts) Use logarithmic differentiation to find y' in terms of x only for $y = (\ln x)^{\sin x}$

3. (6 pts) Strontium-90 has a half-life of 28 days.

(a). A sample has an initial mass of 30 mg. Find a formula for the mass after t days.

[Clearly determine all constants.]

(b). How long does it take for the mass to decay to 15% of the initial amount. [You must show all work.]