# Math 131 - Quiz 4

Name _____

March 24, 2021

Score _____

Show all work to receive full credit. Supply explanations when necessary. This quiz is due April 7.

1. (4 points) Use the appropriate differentiation rules to determine each derivative. Do not simplify, but show all work.

    (a) $\dfrac{d}{dx}(x^2 e^{-2x})$

    (b) $\dfrac{d}{dx}\sin^{-1}(e^x)$

    (c) $\dfrac{d}{dx}\ln[(5x+1)^3]$

    (d) $\dfrac{d}{dt}5^{t^2}$

*Turn over.*

2. (2 points) Let $f(x) = x^3 + 5x + 1$. Find $(f^{-1})'(-5)$.

3. (2 points) Compute $\dfrac{dx}{dt}$ at $x = -2$ if $y = 2x^2 + 1$ and $\dfrac{dy}{dt} = -1$.

4. (2 points) Find the linearization of $f(x) = e^x$ at $x = 0$. Then use your linearization to approximate $e^{0.05}$.