

HW 1 Calculus **Review** (8 points)

For each of the question in below:

First, show hand calculation. No calculators permitted. Show enough work to get the credit.

Then, use R to verify your answers, show both the R code and output.

1. If $f(x) = e^{4x}$ then $f'(1) =$

2. If $f(x) = \ln(1 - 2x)$ then $f'(1) =$

3. If $f(x) = x^3 e^{4x}$ then $f'(1) =$

4. If $f(x) = \frac{e^x}{x^2 + 1}$ then $f'(2) =$

5. $\int_0^1 3x \, dx =$

6. $\int_0^1 \frac{x}{1 + x^2} \, dx =$

7. $\int_0^1 x e^x \, dx =$

8. $\int_0^2 \int_0^1 (x + y) \, dx dy =$