

MATH 119 EXAM

1) Find the derivatives of the following functions:

- $f(x) = \frac{e^{2x}}{e^x + 1}$

- $g(x) = (e^{x^2} - x)^2$

- $h(x) = -\ln\left(\frac{3}{2x^3}\right)$

- $k(x) = e^x \ln \sqrt{x^2 + 3}$

2) Evaluate the following integrals:

- $\int (x^3 - 3x^{-7}) dx$

- $\int \frac{dx}{x+1}$

- $\int_0^1 2x(2x^2 + 1)^4 dx$

3) What constant deceleration would a car moving along a straight road have to achieve if it were to be brought from a speed of 88 ft/sec to rest in 9 seconds? What distance would the car travel in that time?

Hint: $s'(t) = v(t)$, $v'(t) = a(t)$, so $s(t) = \int v(t) = \int \int a(t)$.