

Name: \_\_\_\_\_

Be sure to show your work!

5. (\_\_\_\_\_/42 points) Given  $f(x)$ , find  $f'(x)$ .

(a)  $f(x) = \frac{x^2}{\sqrt{x}} + 5e^x$

(b)  $f(x) = \ln\left(\frac{x^3}{e^{-2x}}\right)$  Hint : Use laws of logs

(c)  $f(x) = x^3 \ln(x) + 4x - 6$

(d)  $f(x) = \frac{e^x + x^3}{x^2 + 1}$

(e)  $f(x) = \sqrt{x^3 - 2x^2}$

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

6. (\_\_\_\_\_/8 points) Find the equation of the line tangent to the graph of  $y = 2x + e^x$  at the point where  $x = 0$ .