Name: _____   **Be sure to show your work!**

1. (____/8 points) Find the derivative.

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

    (b) $g(x) = \sqrt{5x+2} + e^{x^3-6}$

2. (____/12 points) An integral problem.

    (a) $\displaystyle\int 2 + \frac{3}{x} + \frac{4}{x^2} + \sqrt{x}\, dx$

    (b) $\displaystyle\int (3x^2 + 2)e^{x^3+2x} + \frac{x+1}{x^2+2x-6}\, dx$

    (c) Find $g(x)$ if $g'(x) = 5x^4 - \dfrac{1}{x}$ and $g(1) = 2$.