

Name _____

1. (1 point) Evaluate the following integral.

$$\int \left(\frac{1}{2x+5} + \frac{8}{(x+2)^3} \right) dx$$

2. (1 point) Using the constants A, B, C, D, \dots , show the form of the partial fraction decomposition for the following rational function. Do not solve for the constants and do not evaluate an integral.

$$\frac{2x+5}{(x+2)(x-1)^3(x^2+1)^2} =$$

3. (2 points) Evaluate the following integral.

$$\int \frac{3x + 1}{x^2 + 3x - 10} dx$$

4. (2 points) Evaluate the following integral.

$$\int \frac{2x^2 + 5x + 4}{x + 1} dx$$

5. (2 points) Evaluate the following integral.

$$\int \frac{6x^2 - 5x + 3}{(x - 1)(x^2 + 1)} dx$$

6. (2 points) Evaluate the following integral. For full points, you should simplify your final answer so that it does not include a trigonometric function applied to an inverse trigonometric function (i.e. $\sin(\cos^{-1} x)$, $\cos(2 \tan^{-1} x)$, etc.).

$$\int \frac{1}{(x^2 + 1)^2} dx$$