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 \( A, B, C, D, \ldots \), 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.).

\[
\int \frac{1}{(x^2 + 1)^2} \, dx
\]