Partial Fractions Assignment

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Partial Fractions Assignment

Question 0

Watch the lecture video here.

Did you watch the video? [Type yes or no.]

For each rational function below:

A. Define the function: `f(x)=...`

> [Make sure you put parentheses around the numerator and denominator, and put a multiplication between each factor in the denominator.]

B. Find the partial fraction decomposition of the function: `f(x).partial_fraction()`

C. Integrate each term of the decomposition separately: `integral(...,x)`

> [Use one line for each term of the decomposition; **do not add these together**.]

D. Integrate the function: `integral(f(x),x)`

E. Compare the results of steps C and D.

Question 1

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

Question 2

$$f(x) = \frac{4x^3 - 1}{(x^2 - 2x + 4)^2 (3x - 7)}$$

Question 3

$$f(x) = \frac{6x^2 + 9x - 2}{(x + 2)^2 (x - 1)(x^2 + 5)}$$

Question 4

$$f(x) = \frac{x^7 + x^3 + 1}{(x - 2)(x - 3)(x^2 + 5)}$$

[Note: Part of the partial fraction decomposition will be a polynomial. You can integrate the polynomial portion all together.]