

## Calculus 2: Harder PFD Problems

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$$(Q1.) \int \frac{1}{x^{2021} + x} dx$$

$$(Q2.) \int \frac{1}{x + 3\sqrt{x} + 2} dx$$

$$(Q3.) \int \frac{x^2 + 1}{x^4 + 1} dx$$

$$(Q4.) \int \frac{1}{x^3 + 1} dx$$

$$(Q5.) \int \frac{1}{x^4 + x^3 + x^2 + x} dx$$

$$(Q6.) \int_0^{\frac{1}{2}} \frac{1}{1 + x^2 + x^4 + \dots} dx$$

$$(Q7.) \text{ Given } \int \frac{1}{x^2 - 1} dx = -\tanh^{-1}(x) + C. \text{ Determine } \int \frac{\sqrt{x}}{x^2 - 1} dx$$

$$(Q8.) \text{ Given } \int \frac{e^x}{x} dx = \text{Ei}(x) + C. \text{ Determine } \int \frac{e^x}{x^2 - 1} dx$$

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