SKILL #7: Using Partial Fractions

We saw earlier that we can split some expressions into partial fractions. This allows us to integrate some expressions with more complicated denominators.

Find $\int \frac{2}{x^2-1}\, dx$

Further Examples

Find $\int \frac{x-5}{(x+1)(x-2)}\, dx$

Find $\int \frac{8x^2-19x+1}{(2x+1)(x-2)^2}\, dx$

Test Your Understanding

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$$f(x) = \frac{4-2x}{(2x+1)(x+1)(x+3)} = \frac{A}{(2x+1)} + \frac{B}{(x+1)} + \frac{C}{(x+3)} .$$

(*a*) Find the values of the constants A, B and C. **(4)**

(*b*) (i) Hence find $\int f(x)\ dx$. **(3)**

(ii) Find $\int_0^2 f(x)\ dx$ in the form $\ln k$, where k is a constant. **(3)**