MAC2312: Calculus 2 - Section 3

Quiz 3: 7.4 Integration of Rat'l Fcns by Part'l Fractions — May 21, 2015

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

   A. $2\ln|2x+1| + \frac{1}{2}\ln|x-1| + C$

   B. $\frac{1}{2}\ln|2x+1| + 2\ln|x-1| + C$

   C. $\ln|2x+1| + 2\ln|x-1| + C$

   D. $2\ln|2x+1| + \ln|x-1| + C$

$$\frac{5x+1}{(2x+1)(x-1)} = \frac{A}{2x+1} + \frac{B}{x-1}$$
$$5x+1 = A(x-1) + B(2x+1)$$
$$x = -\frac{1}{2} \Rightarrow A = 1$$
$$x = 1 \Rightarrow B = 2$$

so

$$\int \frac{5x+1}{(2x+1)(x-1)}\,dx = \int \left(\frac{1}{2x+1} + \frac{2}{x-1}\right)\,dx$$
$$= \frac{1}{2}\ln|2x+1| + 2\ln|x-1| + C$$