

$$\int \frac{2x^2 - 3x + 1}{x + 1} dx$$

$$\begin{aligned} S((2x^2-3x+1)/(x+1))dx &= S(2x^2/(x+1)-3x/(x+1)+1/(x+1))= \\ &= 2S(x^2/(x+1))dx + S(-3x/(x+1))dx + S(1/(x+1))dx = \\ &= (x+1)^2 - 4(x+1) + 2\ln|x+1| - (3(x+1) - 3\ln|x+1|) + \ln|x+1| + C = \\ &= x^2 + 2x + 1 - 4x - 4 + 2\ln|x+1| - 3x - 3 + 3\ln|x+1| + \ln|x+1| + C = \\ &= x^2 - 5x + 6\ln|x+1| + C \end{aligned}$$

1)

1 способ

$$\begin{aligned} 2(x^2/(x+1)) &= 2S((t^2-2t+1)/t)dt = \\ &= 2S(t^2/t - 2t/t + 1/t)dt = 2S(t - 2 + 1/t)dt = 2(t^2/2 - 2t + \ln|t|) = \\ &= 2((x+1)^2/2 - 2(x+1) + \ln|x+1|) = (x+1)^2 - 4(x+1) + 2\ln|x+1| \\ x+1 &= t \end{aligned}$$

2 способ

$$\begin{aligned} (x^2/(x+1)) &= (x^2 + 2x + 1 - 2x - 1)/(x+1) = (x^2 + 2x + 1 - 2x - \\ &1)/(x+1) = \\ &= (x+1)^2/(x+1) - 2x/(x+1) - 1/(x+1) \end{aligned}$$

2)

$$\begin{aligned} S(-3x/(x+1))dx &= -S((3t-3)/t)dt = -S(3-3/t)dt = \\ &= -(3t - 3\ln|t|) = -(3(x+1) - 3\ln|x+1|) \\ t &= x+1 \end{aligned}$$

3)

$$S(1/(x+1))dx = \ln|x+1|$$