

2a) $\int_0^4 \frac{5x+13}{(2x+1)(x+4)} dx$

So, $\int \left(\frac{3}{(2x+1)} + \frac{1}{(x+4)} \right) dx \Rightarrow 3 \int \frac{1}{(2x+1)} + \frac{1}{(x+4)} dx.$

For

$$\int \frac{1}{2x+1}$$

don't forget $\times 3$

$$u = 2x+1$$

$$\frac{du}{dx} = 2$$

$$dx = \frac{1}{2} du$$

$$\frac{1}{2} \int \frac{1}{u} du = \frac{\ln u}{2}$$

$$\frac{\ln(2x+1)}{2}$$

$$\int \frac{1}{x+4} = \ln u$$

$$u = x+4$$

$$\frac{du}{dx} = 1$$

$$= \ln(x+4)$$

$$dx = \frac{du}{1} = du$$

$$3 \times \frac{\ln(2x+1)}{2} + \ln(x+4)$$

$$\text{So, } \frac{3\ln(2x+1)}{2} + \ln(x+4) + C$$