

$$= -x \cos x + \sin x + C$$

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$$a) a) \frac{5x+3}{(x^2+1)(x+4)} = \frac{Ax+B}{x^2+1} + \frac{C}{x+4}$$

$$5x+3 = (Ax+B)(x+4) + C(x^2+1)$$

$$x=-4 \Rightarrow -17 = 0 + 17C \Rightarrow C = -1$$

$$x=0 \Rightarrow 3 = 4B + C = 4B - 1 \Rightarrow B = 1$$

$$x=1 \Rightarrow 8 = (A+1) \times 5 + 2x - 1 \Rightarrow A = 1$$

$$\therefore \frac{5x+3}{(x^2+1)(x+4)} = \frac{x+1}{x^2+1} - \frac{1}{x+4}$$

$$b) \int \frac{x+1}{x^2+1} - \frac{1}{x+4} dx = \int \frac{x}{x^2+1} + \frac{1}{x^2+1} - \frac{1}{x+4} dx$$

$$= \frac{1}{2} \ln(x^2+1) + \tan^{-1} x - \ln(x+4) + C$$

$$= \ln \left( \frac{\sqrt{x^2+1}}{x+4} \right) + C + \tan^{-1} x$$