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MBBS

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$$\textcircled{1} \int \frac{11 - 3x}{x^2 + 2x - 3}$$

$$\int \frac{-3x - 11}{(x-1)(x+3)}$$

$$A + B = -3x - 11$$

$$\frac{A}{(x-1)(x+3)} + \frac{B}{(x-1)(x+3)}$$

Multiply both sides by  $(x-1)(x+3)$

$$A(x+3) + B(x-1) = -3x - 11$$

$$Ax + 3A + Bx - B = -3x - 11$$

$$A + B = -3$$

$$3A - B = -11$$

$$A = 2 \quad B = -5$$

Thanks  
for  
Coming

20th APRIL,

$$\int \frac{2}{x-1} dx - \int \frac{5}{x-2} dx$$

$$u = x-1$$

$$u = x-2$$

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

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

$$dx = du$$

$$dx = du$$

$$\int \frac{2 du}{u}$$

$$\int \frac{5 du}{u}$$

$$2 \ln(u) - 5 \ln(u)$$

$$= 2 \ln(x-1) - 5 \ln(x-2) + C$$

$$2) \quad \frac{4x-16}{x^2-2x-3} = \frac{4x-16}{(x-3)(x+1)}$$

$$\frac{A}{(x-3)} + \frac{B}{(x+1)} = \frac{4x-16}{(x-3)(x+1)}$$

Multiply B-s by  $(x-3)(x+1)$

$$A(x+1) + B(x-3) = 4x-16$$

$$Ax + A + Bx - 3B = 4x - 16$$

$$A + B = 4$$

$$A - 3B = 16$$

$$-4B = 12$$

$$\therefore A = 1$$

$$B = -3$$

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

$$u = x - 3$$

$$u = x + 1$$

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

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

$$du = dx$$

$$du = dx$$

$$\int \frac{1}{u} du - 3 \int \frac{1}{u} du$$

$$\ln |u| - 3 \ln |u|$$

$$= \ln(x-3) - 3 \ln(x+1) + C$$

Thanks  
for  
Coming

20th APRIL, 2



$$(3) \int \frac{2x^2 - 9x - 35}{(x+1)(x-2)(x+3)} dx$$

$$= \frac{A}{x+1} + \frac{B}{x-2} + \frac{C}{x+3} = \frac{2x^2 - 9x - 35}{(x+1)(x-2)(x+3)}$$

Multiply by  $(x+1)(x-2)(x+3)$

$$2x^2 - 9x - 35 = A(x-2)(x+3) + B(x+1)(x+3) + C(x+1)(x-2)$$

$$f(2) = 2(2)^2 - 9(2) - 35 = 0 + B(2+1)(2+3) + 0$$

$$-45 = 15B$$

$$\therefore B = \frac{-45}{15}$$

$$B = -3$$

$$f(-1) = 2(-1)^2 - 9(-1) - 35 = 0 + 0 + C(-1+3)(-1-2) + 0$$

$$= -24 = -6C$$

$$C = \frac{-24}{-6}$$

$$C = 4$$

$$f(-3) \Rightarrow 2(-3)^2 - 9(-3) - 35 = 0 + 0 + C(-3+1)(-3-2)$$

$$10 = 10C$$

$$\therefore C = \frac{10}{10}$$

$$= 1$$

$$\therefore \int \frac{2x^2 - 9x - 35}{(x+1)(x-2)(x+3)} dx = \int \frac{4 dx}{x+1} + \int \frac{-3 dx}{x-2} + \int \frac{1 dx}{x+3}$$

$$\int \frac{4 dx}{x+1} + \int \frac{-3 dx}{(x-2)} + \int \frac{1 dx}{x+3}$$

$$u = x+1$$

$$u = x-2$$

$$u = x+3$$

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

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

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

$$du = dx$$

$$du = dx$$

$$du = dx$$

$$4 \int \frac{du}{u}$$

$$-3 \int \frac{du}{u}$$

$$\int \frac{du}{u}$$

$$4 \ln(u) - 3 \ln(u) + 1 \ln(u)$$

$$= 4 \ln(x+1) - 3 \ln(x-2) + 1 \ln(x+3) + C_4$$