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MATRIC NO:- 19/mhs01/295
DEPARTMENT:- MBBS

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

$\frac{11-3x}{(x-1)(x+3)} = \frac{A}{(x-1)} + \frac{B}{(x+3)}$

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

even $x=-3$

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

$11+9 = -4B$

$20 = -4B$

$B = 20/-4 = -5$

$B=-5$

when $x=1$

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

$8 = 4A$

$A = 2$

$\frac{11-3x}{(x-1)(x+3)} = \frac{2}{(x-1)} - \frac{5}{(x+3)}$

$\int \frac{11-3x}{x^2+2x-3} = \int \frac{2}{(x-1)} - \int \frac{5}{(x+3)}$

$= 2\ln(x-1) - 5\ln(x+3)$

2.) $\int \frac{4x-16}{x^2-2x-3}$

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

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

When $x=3$

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

$-4 = 4B$

$B = -1$

when $x=-1$

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

$-20 = -4A$

$A = 5$

$\frac{4x-16}{(x+1)(x-3)} = \frac{5}{(x+1)} - \frac{1}{(x-3)}$

$\int \frac{4x-16}{x^2-2x-3} = \int \frac{5\,dx}{(x+1)} - \int \frac{dx}{(x-3)}$

$= 5\ln(x+1) - \ln(x-3)$

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

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

cont.

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

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

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

$2x^2-9x-35 = A(x^2+x-6)+B(x^2+4x+3)+C(x^2-x-2)$

$2x^2-9x-35 = Ax^2-Ax-6A+Bx^2+4Bx+3B+Cx^2-Cx-2C$

$= x^2(A+B+C)+x(A+4B-C)+1(-6A+3B-2C)$

$A+B+C=2$ ---(i)

$A+4B-C=-9$ ---(ii)

$-6A+3B-2C=-35$ ---(iii)

$A=2-B-C$ ---(iv) put eq (iv) in eq (ii) & (iii)

$(2-B-C)+4B-C=-9$

$2+3B-2C=-9$ ---

$-6(2-B-C)+3B-2C=-35$

$9B+4C=-23$

$3B-2C=-11$ ---(i) $\times 9$

$9B+4C=-23$ ---(ii) $\times 3$

$27-18C=-99$ ---(ii) $\times 3$

$-27+12C=-69$

$-30C=-30$

$30 \quad -30$

$C=1$

From $3B-2C=-11$

$3B-2=-11$

~~Name: [illegible]~~

Cont 3.

$\frac{3B}{3} = \frac{-}{3}$

$B = -3$

$A = 2 - B - C$

$= 2 - (-3) - 1$

$= 2 + 3 - 1$

$A = 4$

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

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

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