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COMPUTER ENGINEERING
19/Eng02/071 Serial NO.

MAT 104

) $(11-3x)/$
x^2+2x-3

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

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

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

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

Let or $-1=0 \Rightarrow x-1$

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

$11-3 = 4A \quad A = 2$

Let $x+3=0 \Rightarrow x=-3$

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

$11+9 = -4B$

$20 = -4B$

$B = -5$

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

$$\int 11-3x/x^2+2x-3 = \int 2/(x-1) - \int 5/x+3 + C$$

$$2\text{Log}_e(x-1) - 5\text{Log}_e(x+3) = \text{Log}\frac{(x-1)^2}{(x+3)^{-5}} + C$$

2. $(2x^2 - 9x - 35) / (x+1)(x-2)(x+3)$

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

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

let $x+1 = 0 \Rightarrow x = -1$

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

$$2 + 9 - 35 = -6A$$

$$16 - 35 = -6A$$

$$-25 = -6A$$

$$A = \frac{-25}{-6} = 25/6$$

let $(x-2) = 0 \quad x = 2$

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

$$8 - 18 - 35 = 15B$$

$$-45 = 15B$$

$$B = -45/15$$

$$B = -3$$

let $x + 3 = 0 \quad x = -3$

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

$$18 + 27 - 35 = 10C$$

$$10 = 10C$$

$$C = 1$$

$$\frac{2x^2 - 9x - 35}{(x+1)(x-2)(x+3)} = \frac{25}{6}\frac{1}{(x+1)} - \frac{3}{(x-2)} + \frac{1}{(x+3)}$$

$$\int \frac{2x^2 - 9x - 35}{(x+1)(x-2)(x+3)} = \int \frac{25}{6(x+1)} - \int \frac{3}{(x-2)} + \int \frac{1}{x+3} + C$$

$$\frac{25}{6}\int \frac{1}{(x+1)} - 3\int \frac{-1}{x-2} + \int \frac{1}{x+3}$$

$$\frac{25}{6}\log_e^{(x+1)} - 3\log_e^{(x-2)} + \log_e(x+3)$$

$$\log_e \frac{(x+1)^{25/6}(x+3)}{(x-2)^3} + C$$

3. $$\frac{1}{x^2+121} = \int \frac{1}{(x+11)^2} = \int (x+11)^{-2}$$

$$= \frac{(x+11)^{-1}}{-1}$$

$$= \frac{-1}{(x+11)} + C$$