

ONUORAH ADAMMA JANE T
19/MHS 01/351

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

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

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

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

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

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

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

$$\text{let } x = 1$$

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

$$8 = B(4)$$

$$B = 2$$

$$\text{let } x = -3$$

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

$$11+9 = A(-4)$$

$$20 = A(-4)$$

$$A = -5$$

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

$$\text{let } u = (x+3)$$

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

$$dx = du$$

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

$$\text{let } u = (x-1)$$

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

$$dx = du$$

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

NUORAH ADAMMA JANET

-5ln d

$$-5 \ln d + 2 \ln d$$

$$2 \ln d - 5 \ln d$$

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

19/11/2021/351

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

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

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

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

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

$$\text{let } x = -1$$

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

$$-4 - 16 = B(-4)$$

$$-20 = B(-4)$$

$$B = 5$$

$$\text{let } x = 3$$

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

$$12 - 16 = A(4)$$

$$-4 = A(4)$$

$$A = -1$$

19/11/2015

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

let $u = x-3$ let $u = x+1$

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

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

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

$$\int \frac{5 \cdot \frac{du}{1}}{u}$$

$$5 \ln|u|$$

$$-1 \ln|u|$$

$$-1 \ln|u| + 5 \ln|u|$$

$$5 \ln|x+1| - \ln|x-3|$$

8 $\int \frac{2x^2 - 9x - 35}{(x+1)(x-2)(x+3)}$

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

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

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

Let $x = 2$

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

$$8 - 18 - 35 = B(3)(5)$$

$$-45 = B(15)$$

$$B = -3$$

19 Partial Sol / 351

Let $x = -3$

$$2(-3)^2 - 9(-3) - 35 = C(x+1) \quad (\text{cancel}) \quad (-3-2)$$

$$18 + 27 - 35 = C(-2) \quad (5)$$

$$10 = C(-2)$$

$$C = 1$$

~~$x = -1$~~

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

$$2 + 9 - 35 = A(-3) \quad (+2)$$

$$-24 = A(-6)$$

$$A = 4$$

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

let $u = x+1$

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

$$dx = du$$

$$\therefore \frac{4 \cdot du}{u}$$

$$4 \ln u$$

$$4 \ln(x+1)$$

let $u = x-2$

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

$$dx = du$$

$$\therefore \frac{-3 \cdot du}{u}$$

$$-3 \ln u$$

$$-3 \ln(x-2)$$

let $u = x+3$

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

$$dx = du$$

$$\therefore \frac{1 \cdot du}{u}$$

$$\ln u$$

$$\ln(x+3)$$