

NWADIKE PEACE ULOMA

19/MHS011262

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

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

$$11-3(1) = A(4) + B(0)$$

$$8 = 4A$$

$$A = 2$$

$$f(-3)$$

$$11-3(-3) = A(0) + B(-3-1)$$

$$11+9 = -4B$$

$$20 = -4B \therefore B = -5$$

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

$$= \int \frac{2}{u} du = 2 \ln|x-1|$$

$$u = x+3$$

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

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

$$\therefore dv = dx$$

$$\int \frac{2}{u} du = 2 \int \frac{1}{u} du$$

$$= \int \frac{5}{v} dv$$

$$2 \ln|u| = 2 \ln|x-1|$$

$$= 5 \ln|v|$$

$$= 5 \ln|x+3|$$

$$2 \ln|x-1| - 5 \ln|x+3|$$

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

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

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

$$f(-1)$$

$$4(-1)-16 = A(-1-3) + B(0)$$

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

$$A = 5$$

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for $f(-1)$

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

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

$$-24 = -6A \therefore A = 4$$

$f(-3)$

$$2(-3)^2 - 9(-3) - 35 = A(-3-3)(0) + C(-2)(-5)$$

$$2(9) + 27 - 35 = 10C$$

$$10 = 10C$$

$$C = 1$$

$$A = 4, B = -3, C = 1$$

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

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

let $u = x+1$

let $u = x-2$

let $u = x+3$

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

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

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

$$du = dx$$

$$du = dx$$

$$du = dx$$

$$4 \int \frac{1}{u} du$$

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

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

$$4 \ln u$$

$$-3 \ln u$$

$$\ln u$$

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

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

$$\ln(x+3)$$

$f(x)$

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

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for $f(x)$

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

$$12 - 16 = 4B$$

$$-4 = 4B$$

$$B = -1$$

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

$$= \int \frac{5}{x+1} - \int \frac{1}{x-3}$$

let $u = x+1$

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

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

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

$$5 \ln u = 5 \ln(x+1)$$

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

let $u = x-3$

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

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

$$\ln u$$

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

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

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

for $f(2)$

$$2(2)^2 - 9(2) - 35 = A(0)(5) + B(3)(5) + C(3)(0)$$

$$2(4) - 18 - 35 = 15B$$

$$-45 = 15B$$

$$B = -45/15$$

$$B = -3$$

for $f(x)$

$$2(x)^2$$

$$2x$$

$$-$$

$f(x)$

$$2(x)$$

$$2(x)$$

$$A = 4$$

$$\int \frac{2x^2}{x}$$

let

$$\frac{du}{dx}$$

$$du =$$

$$4 \int \frac{1}{u}$$

$$4 \ln u$$

$$4 \ln(x)$$