

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

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

f(4)

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

$$9 = 4A$$

$$A = 2$$

f(-3)

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

$$11+9 = -4B$$

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

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

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

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

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

$$2 \ln u = 2 \ln(x-1)$$

2ln

$$u = (x+3)$$

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

$$dx \therefore du = dx$$

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

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

$$-5 \ln u =$$

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

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

$$x^2 - 3x + x - 3$$

$$x(x-3) + 1(x-3)$$

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

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

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

$$f(-1) \quad 4x-16 =$$

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

$$-4-16 = A-4$$

$$A = 5 //$$

$$B = \text{for } f(3)$$

$$\textcircled{2} -16 = A(0) + B(4)$$

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

$$12-16 = 4B$$

$$-4 = 4B$$

$$B = -1 //$$

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

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

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

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

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

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

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

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

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

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

$$du = dx$$

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

$$= \ln u$$

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

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

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

For $x=2$

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

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

$$-45 = 15B$$

$$B = -45/15$$

$$B = -3$$

For $x=-1$

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

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

$$-24 = -6A$$

$$A = \frac{-24}{-6} = 4$$

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

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

For $x=-3$

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

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

$$10 = 10C$$

$$C = 1$$

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

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

$$\text{Let } u = (x+1)$$

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