3) $$\int \frac{2x^2 - 9x - 35}{(x+1)(x-5)(x+3)}\,dx$$

$$= 4\ln(x+1) - 3\ln(x-5) + \ln(x+3)$$

NAME: ILOKO FAITH OMADJO
MATRIC NO: 19/MHS01/420

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

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

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

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

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

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

At $x = 1$

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

$B = -32$

At $x = 3$

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

$A = 12-16$

$= -4$

$\int \frac{-4}{x-3} + \int \frac{-32}{x+1} = \int \frac{4x-16}{x^2-2x-3}$

$\int \frac{-4dx}{x-3} + \int \frac{-32dx}{x+1} = \int \frac{4x-16}{x^2-2x-3} dx$

Let $u = x-3$

$u = x+1$

$du = dx$ $\quad$ $du = dx$

$= \int \frac{-4du}{u}$ $\quad$ $\int \frac{-32du}{du} = 4\ln u = 32\ln u$

$\therefore 4\ln(x-3) + 32\ln(x+1)$