

$$\begin{aligned}
37.) \quad & \frac{d}{dx} \left[\frac{2x^2 - 3x + 1}{x^3 + 2x^2 - 8x - 18} \right] = \left(\frac{\frac{d}{dx}[2x^2 - 3x + 1][x^3 + 2x^2 - 8x - 18] - [2x^2 - 3x + 1]\frac{d}{dx}[x^3 + 2x^2 - 8x - 18]}{(x^3 + 2x^2 - 8x - 18)^2} \right) \\
& = \frac{[4x - 3][x^3 + 2x^2 - 8x - 18] - [2x^2 - 3x + 1][3x^2 + 4x - 8]}{(x^3 + 2x^2 - 8x - 18)^2} \\
& = \frac{[4x^4 + 8x^3 - 32x^2 - 72x - 3x^3 - 6x^2 - 24x + 54] - [6x^4 + 8x^3 - 16x^2 - 9x^3 - 12x^2 - 24x + 3x^2 + 4x - 8]}{(x^3 + 2x^2 - 8x - 18)^2} \\
& \quad \frac{[4x^4 + 5x^3 - 38x^2 + 48x + 54] - [6x^4 - x^3 - 25x^2 - 20x - 8]}{(x^3 + 2x^2 - 8x - 18)^2} \\
& = \frac{-2x^4 + 6x^3 - 13x^2 - 76x + 62}{(-x^3 - 2x^2 + 8x + 18)^2} = \frac{-2x^4 + 6x^3 - 13x^2 - 76x + 62}{(-x^3 - 2x^2 + 8x + 18)^2}
\end{aligned}$$