

Worked Solutions

Pure Maths, Differential Calculus,

sheet PM-DIFF-DF-01

The Power Rule (Derivative Formula) Q. 9

differentiate,

$$y = 3x(x - 2)(2x + 3)$$

expanding,

$$y = 3x(2x^2 - 4x + 3x - 6)$$

$$y = 3x(2x^2 - x - 6)$$

$$y = 6x^3 - 3x^2 - 18x$$

applying the Power Rule:

$$\frac{d}{dx} [x^n] = nx^{n-1}$$

hence:

$$\frac{dy}{dx} = 18x^2 - 6x - 18$$