

6-6.1 MATH PHYSICS

$$w = x^2 y^3 z$$

$$\nabla w = \left(\frac{\partial w}{\partial x}\right)i + \left(\frac{\partial w}{\partial y}\right)j + \left(\frac{\partial w}{\partial z}\right)k$$

$$\nabla w = (2xy^3z)i + (3x^2y^2z)j + (x^2y^3)k$$

Evaluate at pt. (1, 2, -1)

$$\nabla w = -(2 \cdot 1 \cdot 2^3 \cdot 1)i + (3 \cdot 1 \cdot 2^2 \cdot (-1))j + (1 \cdot 2^3)k$$

$$\nabla w = -16i - 12j + 8k$$