

ENG 282 Assignment 3

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17/ENG07/010

Petroleum Engineering

If $\phi = x^2yz^3 + xy^2z^2$, write a MATLAB mfile to determine $\text{grad } \phi$ at the point $P(1, 3, 2)$

Answer

Command window

clear

close all

clc

Syms x, y, z

$$f = x^2z^3 + xy^2z^2$$

$$g = \text{diff}(f, x)$$

$$h = \text{diff}(f, y)$$

$$I = \text{diff}(f, z)$$

$$J = g + h + I$$

$$\text{subs}(J, [x, y, z], [1, 3, 2])$$

Answer

84

32

72

$$\therefore \text{grad } \phi = 84i + 32j + 72k$$