

Assigment 3
=> if $\phi = x^2 + y^2 + z^3 + xy^2z^2$, write a matlab mfile program to calculate gradient at the point $P(1, 3, 2)$

=> input

Command window

clear

clc

close all

syms x

syms y

$$\phi = x^2 + y^2 + z^3 + x*y^2*z^2$$

$$g = \text{gradient}(\phi, [x, y, z])$$

subs(g, [x, y, z], [1, 3, 2])

Output

$$\phi = x^2 + 2*x*y*z^2 + x*y^2*z^2$$

$$g = y^2 + 2*z^2 + 2*x*y*z^2$$

$$x^2 + 2*z^3 + 2*x*y*z^2$$

$$3*x^2 + 2*y*z^2 + 2*x*y^2*z^2$$

81

32

72

$$\Rightarrow 8i + 32j + 72k$$