

IBRAHIM ABDULHAMID

715NG1061040

MECHANICAL ENGINEERING

ENGR 282

ASSIGNMENT 3

If $\phi = x^2 y z^3 + x y + z^2$, write a MATLAB program to determine grad ϕ at the point $(1, 3, 2)$.

Soln:

Command Window

```
clear
```

```
clc
```

```
Syms a, b, c; x, y, z; G, U, i, j, k, H;
```

```
D = ((x^2)*y*(z^3) + x*(y^2) + (z^2))
```

```
a = diff(D, x)
```

```
b = diff(D, y)
```

```
c = diff(D, z)
```

```
G = a*i + b*j + c*k
```

```
x = 1
```

```
y = 3
```

```
z = 2
```

```
H = i*(y^2 + z^2 + x*y*z^3) + (x^2 + z^3 + 2*y*z^2)*j +  
k*(3*x^2*y + z^2 + x*y^2*z)
```