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17/ENG04, 064 Elect/Elect

If  $\phi = x^2 y z^3 + x y^2 z^3$  with MATLAB Program  
to determine grad  $\phi$  at Point  $(1, 3, 2)$   
sol.

Command window

```
clear
```

```
clc
```

```
syms a b c x y z G i j k w
```

```
u = 1 (x^2 z)^y y^x (z^3) 1 + x^2 (y z)^x (z^2)
```

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

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

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

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

```
w = 1
```

```
y = 3
```

```
z = 2
```

```
w = 1^c (y^2 z^2 + 2^x y^x z^3) +
```

```
j^x (x^2 z^3 + 2^y x^x z^2) +
```

```
k (3 x^2 y^x z^2 + 2^y y^x z^2)
```