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Level Engineering

17182001038

Assignment 3

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

Solution

Command window

```
clear
```

```
clc
```

```
Syms a b c; x, y, z. A, u, i, j, k, H;
```

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

$$a = \text{diff}(D, x)$$

$$b = \text{diff}(D, y)$$

$$c = \text{diff}(D, z)$$

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

$$x = 1$$

$$y = 3$$

$$z = 2$$

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