

Assignment 5

Question

If $f = (x^2 + y^2 + z^2)^{\frac{3}{2}}$, then find $\text{grad}(f)$

Code

```
1  syms x y z;  
2  f = (x.^2 + y.^2 + z.^2).^(3/2);  
3  disp('Scalar Function f = ');  
4  disp(f);  
5  grad_f = gradient(f,[x,y,z]);  
6  disp('grad(f) at (x,y,z) = ');  
7  disp(grad_f);
```

Output

```
>> Assignment_5  
Scalar Function f =  
(x^2 + y^2 + z^2)^(3/2)  
  
grad(f) at (x,y,z) =  
3*x*(x^2 + y^2 + z^2)^(1/2)  
3*y*(x^2 + y^2 + z^2)^(1/2)  
3*z*(x^2 + y^2 + z^2)^(1/2)  
  
>>
```