MATLAB - MAGNITUDE OF A VECTOR

Magnitude of a vector v with elements v1, v2, v3, ..., vn, is given by the equation −

$|v| = \sqrt{(v1^2 + v2^2 + v3^2 + ... + vn^2)}$

You need to take the following steps to calculate the magnitude of a vector −

- Take the product of the vector with itself, using **array multiplication** . ∗ . This produces a vector sv, whose elements are squares of the elements of vector v.

  sv = v.*v;

- Use the sum function to get the **sum** of squares of elements of vector v. This is also called the dot product of vector v.

  dp= sum*sv*;

- Use the **sqrt** function to get the square root of the sum which is also the magnitude of the vector v.

  mag = sqrt*s*;

Example

Create a script file with the following code −

```
v = [1: 2: 20];
sv = v.* v;       %the vector with elements
                  % as square of v's elements
dp = sum(sv);     % sum of squares -- the dot product
mag = sqrt(dp);  % magnitude
disp('Magnitude:'); disp(mag);
```

When you run the file, it displays the following result −

```
Magnitude:
76877/2108
```