

Quiz #6

1. In engineering mechanics, a vector is a set of numbers that indicate both magnitude and direction. Terms such as velocity and force are vector quantities. An example of a velocity vector could be $\langle 2.34, 4.244, 5.323 \rangle$ meters/second. This vector describes the velocity of a particle at a certain point in three-dimensional space, $\langle x, y, z \rangle$. In solving problems related to vectors, it's handy to know the unit vector of a certain measurement. A unit vector is a vector that has a certain direction, but a magnitude of 1. The equation for a unit vector in three-dimensional space is:

$$\vec{u} = \frac{\langle x, y, z \rangle}{\sqrt{x^2 + y^2 + z^2}}$$

Write a script that prompts the user for x , y , and z values and then calculates the unit vector. Use the `disp` command to output the unit vector.

2. In the SI system, speed is measured in meters per second (m/s). A foot per second (ft/s) is equivalent to 0.305 m/s. Write a script that prompts the user to enter speed in meters per second and will print the equivalent speed in feet per second. Your script must produce output in exactly the same *format* as the example shown below:

```
Enter the speed in m/s :9.3
```

```
A speed of 9.300 m/s
```

```
is equal to 30.492 ft/s
```