If a unit vector is represented by $0.5\mathbf{i} - 0.8\mathbf{j} + c\mathbf{k}$, then value of c is

1) 1

2) square root of 0.11

Solution:

Because the length of the unit vector is equal to one

$$|0.5\mathbf{i} - 0.8\mathbf{j} + c\mathbf{k}| = 1$$

$$\sqrt{0.5^2 + (-0.8)^2 + c^2} = 1$$

$$c^2 = 1 - 0.5^2 + (-0.8)^2 = 0.11$$

So

$$c = \sqrt{0.11}.$$

Answer: $c = \sqrt{0.11}$