

**Answer on Question #40903, Physics, Electromagnetism**

An electric charge  $q = 10^{-3} \mu\text{C}$  is placed at the origin (0, 0) of X-Y coordinate system. Two points A and B are situated at  $(\sqrt{2}, \sqrt{2})$ , and (2, 0) respectively. The potential difference between the points A and B will be :- (1)9 volt (2)Zero (3)2 volt (4)3.5 volt

**Solution**

The distance between the points A and the origin is

$$r_A = \sqrt{(\sqrt{2} - 0)^2 + (\sqrt{2} - 0)^2} = 2.$$

The distance between the points B and the origin is

$$r_B = \sqrt{(2 - 0)^2 + (0 - 0)^2} = 2.$$

As the points A and B are at the same distance from the charge  $q$ , they are at same potential. Hence potential difference between the points A and B is zero.

**Answer: (2)Zero.**