

Answer on Question #46016 – Physics – Electromagnetism

Question.

Points A and B each have an electric potential of +12 V. How much work would be required to take 3 C of positive charge from A to B?

Given:

$$\varphi_1 = \varphi_2 = 12 \text{ V}$$

$$q = 3 \text{ C}$$

Find:

$$A = ?$$

Solution.

We can define the required work as changing of potential energies:

$$A = W_1 - W_2$$

By definition the potential energy in point A is equal to:

$$W_A = q\varphi_A$$

Therefore,

$$A = W_1 - W_2 = q(\varphi_1 - \varphi_2) = 0, \text{ since } \varphi_1 = \varphi_2$$

Answer.

$$A = 0$$