



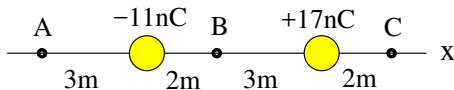
Consider two point charges positioned on the x -axis as shown.

(1a) Find magnitude and direction of the electric field at point C.

(1b) Find the electric potential at point B.

(2a) Find magnitude and direction of the electric field at point B.

(2b) Find the electric potential at point A.





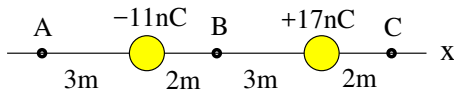
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(1a) Find magnitude and direction of the electric field at point C.

(1b) Find the electric potential at point B.

(2a) Find magnitude and direction of the electric field at point B.

(2b) Find the electric potential at point A.



Solution:

$$(1a) E_x = -k \frac{|-11\text{nC}|}{(7\text{m})^2} + k \frac{|17\text{nC}|}{(2\text{m})^2} = -2.02\text{N/C} + 38.25\text{N/C} = +36.23\text{N/C}.$$



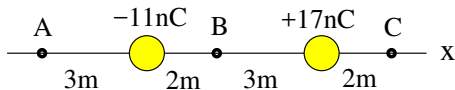
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(1a) Find magnitude and direction of the electric field at point C.

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(2a) Find magnitude and direction of the electric field at point B.

(2b) Find the electric potential at point A.



Solution:

$$(1a) E_x = -k \frac{|-11\text{nC}|}{(7\text{m})^2} + k \frac{|17\text{nC}|}{(2\text{m})^2} = -2.02\text{N/C} + 38.25\text{N/C} = +36.23\text{N/C}.$$

$$(1b) V = k \frac{(-11\text{nC})}{2\text{m}} + k \frac{(17\text{nC})}{3\text{m}} = -49.5\text{V} + 51.0\text{V} = 1.5\text{V}.$$



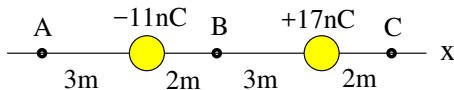
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(1a) Find magnitude and direction of the electric field at point C.

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(2a) Find magnitude and direction of the electric field at point B.

(2b) Find the electric potential at point A.



Solution:

$$(1a) E_x = -k \frac{|-11\text{nC}|}{(7\text{m})^2} + k \frac{|17\text{nC}|}{(2\text{m})^2} = -2.02\text{N/C} + 38.25\text{N/C} = +36.23\text{N/C}.$$

$$(1b) V = k \frac{(-11\text{nC})}{2\text{m}} + k \frac{(17\text{nC})}{3\text{m}} = -49.5\text{V} + 51.0\text{V} = 1.5\text{V}.$$

$$(2a) E_x = -k \frac{|-11\text{nC}|}{(2\text{m})^2} - k \frac{|17\text{nC}|}{(3\text{m})^2} = -24.75\text{N/C} - 17.00\text{N/C} = -41.75\text{N/C}.$$



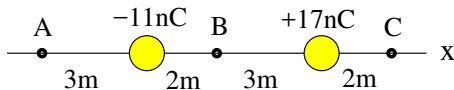
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(1b) Find the electric potential at point B.

(2a) Find magnitude and direction of the electric field at point B.

(2b) Find the electric potential at point A.



Solution:

$$(1a) E_x = -k \frac{|-11\text{nC}|}{(7\text{m})^2} + k \frac{|17\text{nC}|}{(2\text{m})^2} = -2.02\text{N/C} + 38.25\text{N/C} = +36.23\text{N/C}.$$

$$(1b) V = k \frac{(-11\text{nC})}{2\text{m}} + k \frac{(17\text{nC})}{3\text{m}} = -49.5\text{V} + 51.0\text{V} = 1.5\text{V}.$$

$$(2a) E_x = -k \frac{|-11\text{nC}|}{(2\text{m})^2} - k \frac{|17\text{nC}|}{(3\text{m})^2} = -24.75\text{N/C} - 17.00\text{N/C} = -41.75\text{N/C}.$$

$$(2b) V = k \frac{(-11\text{nC})}{3\text{m}} + k \frac{17\text{nC}}{8\text{m}} = -33.0\text{V} + 19.1\text{V} = -13.9\text{V}.$$