

12 A point charge is placed at point X, as shown.

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X

- (a) Add lines to the diagram to show equipotentials at intervals of equal potential difference.

(2)

- (b) A charge of -4.5 nC is placed 4.0 cm from X.

Calculate the magnitude of the force acting on this charge due to the charge at X.
charge at X = $+7.0\text{ nC}$

(2)

Magnitude of force =



- (c) The -4.5 nC charge is moved from a distance of 4.0 cm from X to a distance of 9.0 cm from X.

Calculate the work done on the -4.5 nC charge.

(3)

Work done =

(Total for Question 12 = 7 marks)