$V = \dfrac{Ka}{r}$
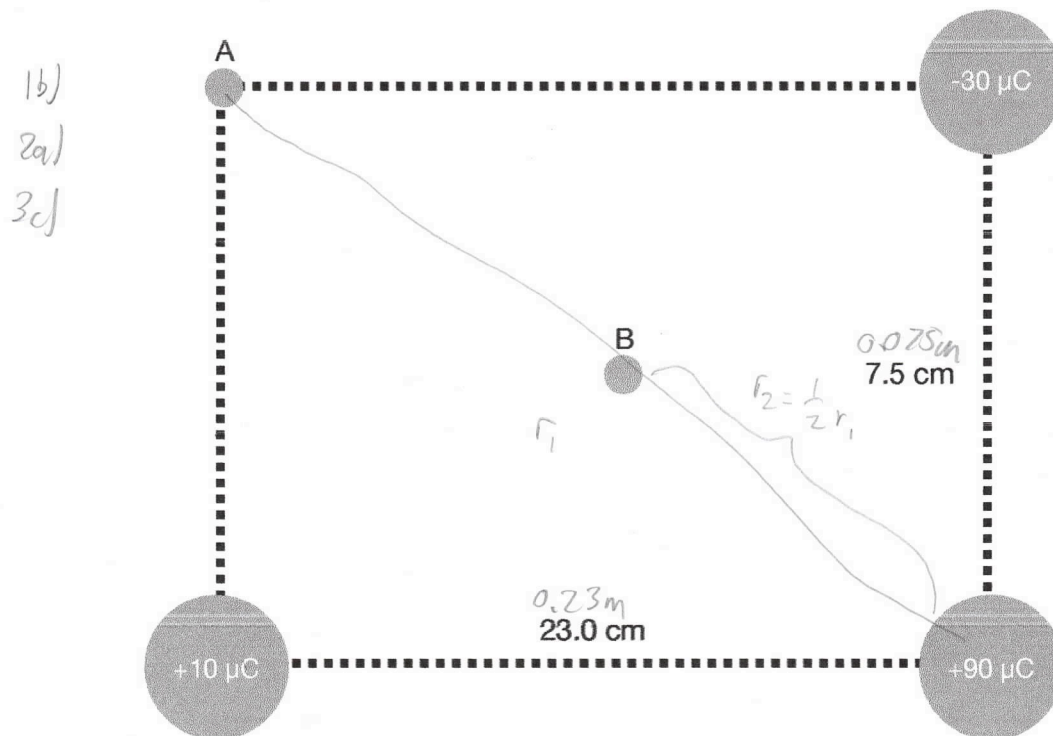
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PSP: This assignment is designed to test your understanding of the current chapter's content. You will be required to solve the problem AND briefly explain your solution using the model provided. Answering the question without explanation will result in a grade of 20% for the assignment.

1) Given the charge distribution below, determine the potential at A (upper left corner of the triangle and B (middle of the rectangle).

1b)
2a)
3c)

A .... -30 µC

B
$r_2 = \frac{1}{2} r_1$ 0.075m
7.5 cm
r_1

0.23m
23.0 cm

+10 µC .... +90 µC

1a) what is the potential at point A and point B?
1d) $PE_1 = ?$
   $PE_2 = ?$
2b) $r_1 = \sqrt{0.23^2 + 0.075^2} = 0.24 m$
   $r_2 = 0.12 m$
3a) B-potential calc, $V = K \dfrac{Q}{r}$
3b) ↗

4a)

Point A	Point B
$10 \cdot 10^{-6}$	$9 \cdot 10^9 \cdot \dfrac{10 \cdot 10^{-6}}{0.12} = 7.44 \cdot 10^5$
$10 \mu C = 9 \cdot 10^9 \cdot \dfrac{10 \cdot 10^{-6}}{0.075} = 1.2 \cdot 10^6$	
$-30 \mu C = 9 \cdot 10^9 \cdot \dfrac{-30 \cdot 10^{-6}}{0.23} = -1.17 \cdot 10^6$	$9 \cdot 10^9 \cdot \dfrac{-30 \cdot 10^{-6}}{0.12} = -2.23 \cdot 10^6$
$+90 \mu C = 9 \cdot 10^9 \cdot \dfrac{90 \cdot 10^{-6}}{0.24} = 3.35 \cdot 10^6$	$9 \cdot 10^9 \cdot \dfrac{90 \cdot 10^{-6}}{0.12} = 6.696 \cdot 10^6$
$\underline{3.37 \cdot 10^6 V}$	$\underline{5.21 \cdot 10^6 V}$

4b)

_____ / 10pts

4c) ✓
4d) ✓
4e) Point A has a potential of $3.37 \cdot 10^6 V$ and point B has a potential of $5.21 \cdot 10^6 V$.