11.

$V_A = 500\,V$. $\quad |\vec{E}| = 200\,N/C$. $\quad \Rightarrow$

(a)

$V_A = k\frac{q}{r_A} = 500\,V$ $\qquad |\vec{E}| = k\frac{q}{r_A^2} = 200\,N/C$.

Aïllem q ⇓

$$\boxed{q = \frac{500 \cdot r_A}{k}}$$

SUBSTITUÏM

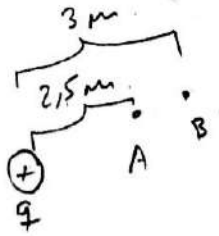
$$|\vec{E}| = k \cdot \frac{\frac{500 \cdot r_A}{k}}{r_A^2} = \cancel{k} \cdot \frac{500 \cdot r_A}{\cancel{k} \cdot r_A^{\cancel{2}}} = 200$$

$$500 = 200\, r_A \Rightarrow \boxed{r_A = \frac{\cancel{500}}{\cancel{200}} = \frac{5}{2}\,m}$$

(b)

$$\boxed{q = \frac{500 \cdot \frac{5}{2}}{9 \cdot 10^9} = \frac{250 \cdot 5}{9 \cdot 10^9} = 1{,}4\cdot 10^{-7}\,C}$$

(c)



$V_A = 500\,V$.

$V_B = k\frac{q}{r}$

$V_B = \frac{9 \cdot 10^9 \cdot 1{,}4 \cdot 10^{-7}}{3} = 420\,V$.

$$\boxed{W = q \cdot (V_B - V_A) = 500\cdot 10^{-3}\,(420 - 500) = -40\,J}$$