P #5

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$q_\alpha = 2 \cdot (1.60 \times 10^{-19}\ C)$ (2 protons)
$= +3.2 \times 10^{-19}\ C$

$m_\alpha = 4.0026\ u \cdot \frac{1.66 \times 10^{-27}\ kg}{1\ u} = 6.64 \times 10^{-27}\ kg$

a) $r = 5.00 \times 10^{-15}\ m$

$$F_e = \frac{k_e \cdot |q_1||q_2|}{r^2} = \frac{(9.0 \times 10^9\ N \cdot m^2/C^2)(3.2 \times 10^{-19}\ C)^2}{(5.00 \times 10^{-15}\ m)^2}$$

$F_e = 36.9\ N$ (repulsive)

b) $F_e = 36.9\ N$
$m_\alpha = 6.64 \times 10^{-27}\ kg$

$F = m \cdot a$
$(36.9\ N) = (6.64 \times 10^{-27}\ kg) \cdot a$

$a = 5.55 \times 10^{27}\ m/s^2$