1. If $A(x) \to 0$ as $|x| \to \infty$, and $\nabla \cdot J = 0$, and there are only static currents, then we know

$$A(x) = \frac{\mu_0}{4\pi} \int_V J(x') \frac{d^3x'}{|x - x'|}$$

Show, only with above, that:

a. $$B(x) = \nabla \times A = \frac{\mu_0}{4\pi} \int_V J(x') \times \frac{(x - x')}{|x - x'|^3} d^3x'$$

b. $$\nabla \cdot A = 0$$

c. $$\nabla^2 A = -\mu_0 J.$$