Section 2.4.1 Gauge transformations

Exercise: (a) Show that a uniform magnetic field $\mathbf{B}_0$ can be described by the vector potential

$$\mathbf{A} = \frac{1}{2} \mathbf{B}_0 \times \mathbf{r}$$

Sketch the vector potential and the magnetic field.
(b) Show that the same magnetic field can be described by the vector potential

$$\mathbf{A}' = \frac{1}{2} \mathbf{B}_0 \times (\mathbf{r} - \mathbf{r}_0)$$

Sketch this vector potential field.
(c) These vector potentials are related by a gauge transformation. What is the gauge function $\Lambda(\mathbf{r})$?