Answers Exam 3

1. $r < R \quad B_x = -\frac{\mu_0 i}{2\pi R^2} y, \quad B_y = \frac{\mu_0 i}{2\pi R^2} x$

$r > R \quad B_x = -\frac{\mu_0 i}{2\pi} \frac{y}{x^2+y^2}; \quad B_y = \frac{\mu_0 i x}{2\pi (x^2+y^2)}$

2. $\vec{B} = \frac{\mu_0 i}{4\pi} \left(\frac{1}{R_1} (2\pi - \theta) + \frac{1}{R_2} \theta \right) \odot$

3. $\vec{F}_{person} = -\vec{F}_{mag} = -\frac{B_0^2 W^2 H \alpha^2}{R} t \, \vec{i}_x$

4. $Q(t) = Q_0 \, e^{-\frac{t}{RC}}$

$C = \frac{Q}{|\Delta V|} = \frac{4\pi \varepsilon_0}{\left| \frac{1}{B} - \frac{1}{A+1} \right|}$