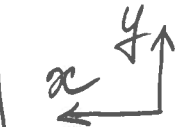
Test 3 2007

1. a) $\vec{B}_{tot} = \frac{\mu_0}{2\pi W}\left[\left(i_1 + \frac{i_2}{2}\right)\vec{i}_x + \left(i_3 + \frac{i_2}{2}\right)\vec{i}_y\right]$



b) $\vec{F} = \frac{\mu_0}{2\pi W} i_4 H\left[\left(i_1 + \frac{i_2}{2}\right)\left(-\vec{i}_y\right) + \left(i_3 + \frac{i_2}{2}\right)\vec{i}_x\right]$

2. $\vec{B}_{tot} = \frac{\mu_0 i}{4\pi H}\left(\frac{W}{\left(\frac{W}{2}\right)^2 + (H)^2}\right)^{1/2}$ ⊗

3. $Q(t) = -C\frac{\mu_0}{2\pi} i_0 W \omega \sin\omega t \ln\frac{H+D}{H}$

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

b) $Q(t) = Q_0 \cos\sqrt{\frac{1}{LC}}\, t$