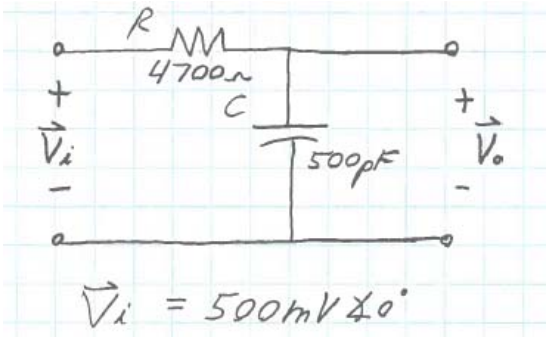
RC LPF – In Class Problem



Find:

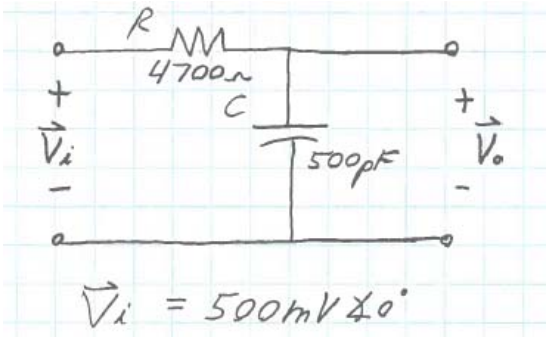
a) fc

b) Sketch the magnitude response (dB) and phase response

c) Vo one octave above fc

d) Vo one decade below fc

RC LPF – In Class Problem



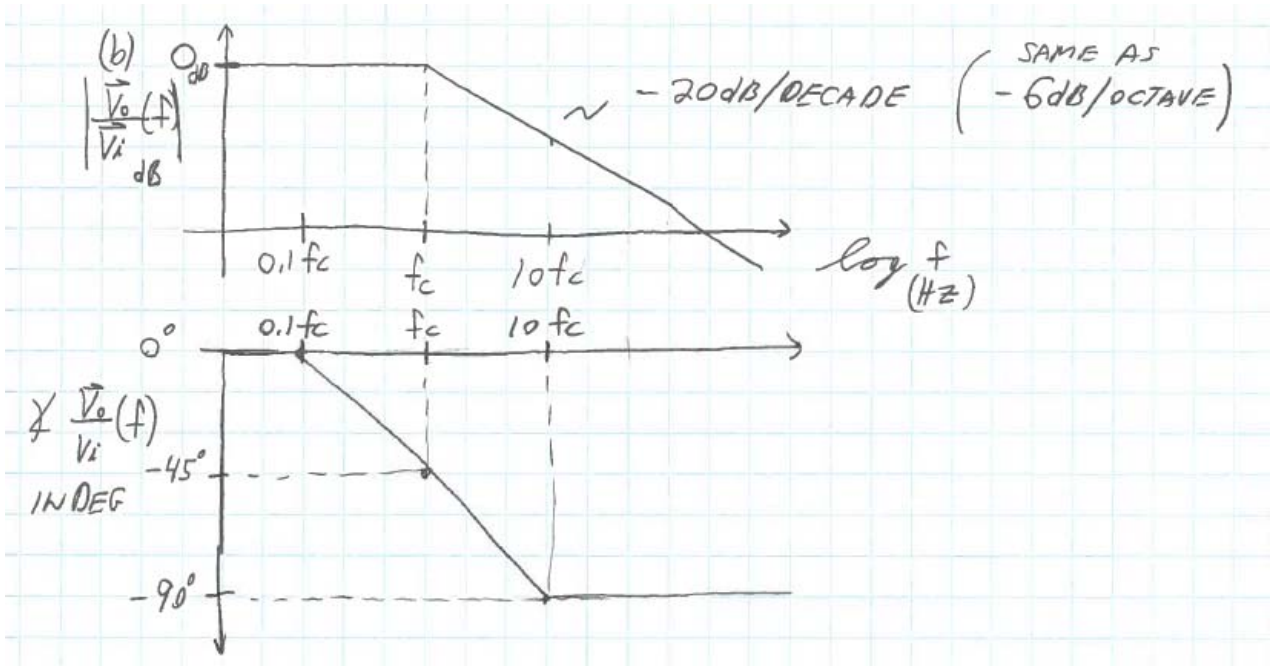
(a) $f_c = \frac{1}{2\pi RC}$

$= \frac{1}{2\pi(4700\Omega)(500pF)}$ $= \boxed{67.73kHz}$

Find:

a) Fc

b) Sketch the magnitude response (dB) and phase response



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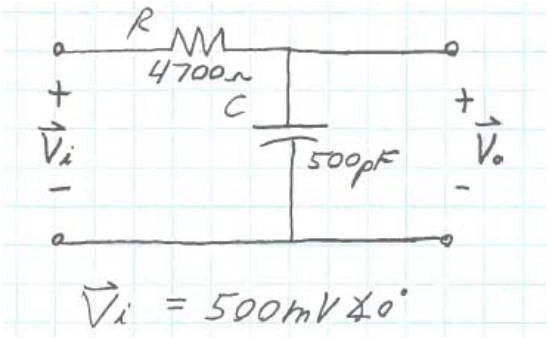
RC LPF – In Class Problem



Find:

c) Vo one octave above fc

d) Vo one decade below fc

(c) $\frac{\vec{V}_o}{\vec{V}_i}(f) = \frac{1}{1+j(2\pi f RC)}$

@ $f = 2f_c = 135.5kHz$:

$\frac{\vec{V}_o}{\vec{V}_i} = 0.447 \angle -63.4°$ ↑ (−7dB)

$\therefore \vec{V}_o = (0.447 \angle -63.4°) \cdot \vec{V}_i$

$\boxed{\vec{V}_o = 0.224V \angle -63.4°}$

(d) @ $f = 0.1f_c = 6.77kHz$

$\frac{\vec{V}_o}{\vec{V}_i} = 0.995 \angle -5.71°$ (−0.04dB)

$\therefore \vec{V}_o = (0.995 \angle -5.71°) \cdot \vec{V}_i$

$\boxed{\vec{V}_o = 497.5mV \angle -5.71°}$

NP