10.1 $\omega = 6E^8$ rad/s $L = 0.35\mu H/m$ $C = 40pF/m$

$G = 75\mu S/m$ $R = 17\Omega/m$

find $\gamma, \alpha, \beta, \lambda$, and Z_0

$$\gamma = \sqrt{(R + j\omega L)(G + j\omega C)}$$

$$= 2.8 + j3.5 = \alpha + j\beta$$

$\alpha = 2.8$ $\beta = 3.5$ $\lambda = 2\pi/\beta = 1.8$

$$Z_0 = \sqrt{\frac{R + j\omega L}{G + j\omega C}} = 44 + j30\,\Omega$$

10.3 $Z_0 = 72\Omega$ $L = 0.5\mu H/m$

a) find C

$$Z = \sqrt{L/C} \rightarrow C = L/Z_0^2 = 96\,pF/m$$

b) find v_p

$$v_p = \frac{1}{\sqrt{LC}} = 1.44E^8\ m/s$$

c) if $f = 80MHz$, find β

$$\beta = \omega\sqrt{LC} = 3.5\ rad/m$$