

Chapter 9, Solution 21.

$$(a) \quad F = 5\angle 15^\circ - 4\angle -30^\circ - 90^\circ = 6.8296 + j4.758 = 8.3236\angle 34.86^\circ$$

$$\underline{f(t) = 8.324 \cos(30t + 34.86^\circ)}$$

$$(b) \quad G = 8\angle -90^\circ + 4\angle 50^\circ = 2.571 - j4.9358 = 5.565\angle -62.49^\circ$$

$$\underline{g(t) = 5.565 \cos(t - 62.49^\circ)}$$

$$(c) \quad H = \frac{1}{j\omega} (10\angle 0^\circ + 50\angle -90^\circ) \quad \omega = 40$$

$$\text{i.e. } H = 0.25\angle -90^\circ + 1.25\angle -180^\circ = -j0.25 - 1.25 = 1.2748\angle -168.69^\circ$$

$$h(t) = 1.2748 \cos(40t - 168.69^\circ)$$