

ENGR 1990 Engineering Mathematics Homework #5 Answers

1. a) $Z = 80 - j53 = 96\angle(-33.5^\circ)$ (Ω)
b) $I = 1.15\angle(93.5^\circ) = -0.0704 + j1.14$ (amps)
c) $i(t) = 1.15\cos(120\pi t + 1.632)$ (amps)

2. a) $Z = 75 + j46.8 = 88.4\angle(32^\circ)$ (Ω)
b) $I = 1.24\angle(-31.95^\circ) = 1.06 - j0.659$ (amps)
c) $i(t) = 1.24\cos(120\pi t - 0.5577)$ (amps)

3. a) $Z_R + Z_C = 100 - j75.8 = 125\angle(-37.2^\circ)$ (Ω) and $Z_L = 189\angle(90^\circ) = j189$ (Ω)
b) $Z_{eq} = 157\angle(4.42^\circ)$ (Ω)

4. a) $Z_{eq} = 244\angle(17.7^\circ)$ (Ω)
b) $I = 0.451\angle(42.3^\circ)$ (amps)
b) $i(t) = 0.451\cos(120\pi t + 0.738)$ (amps)