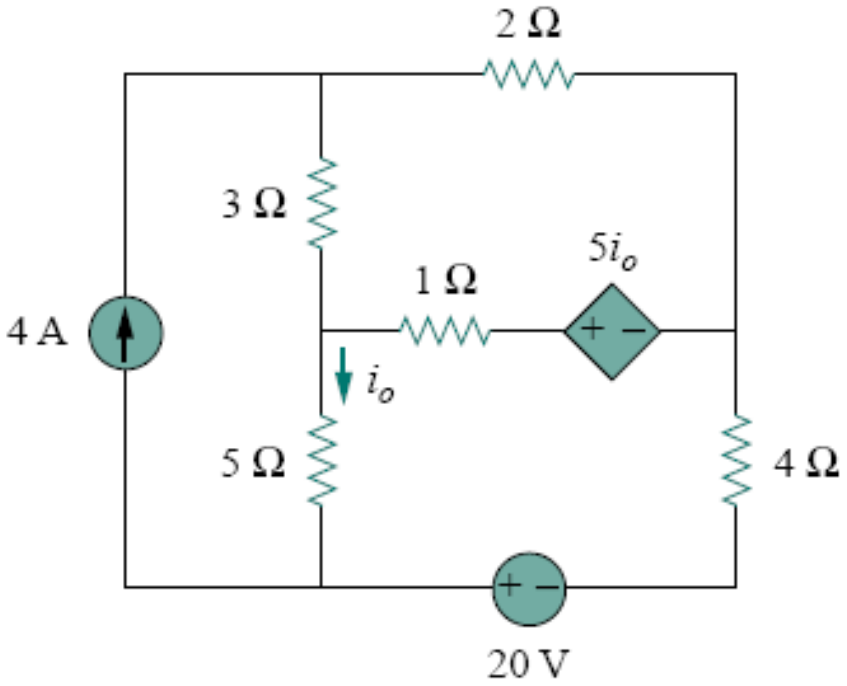
Assignment III
Network Theorems

Problem 1

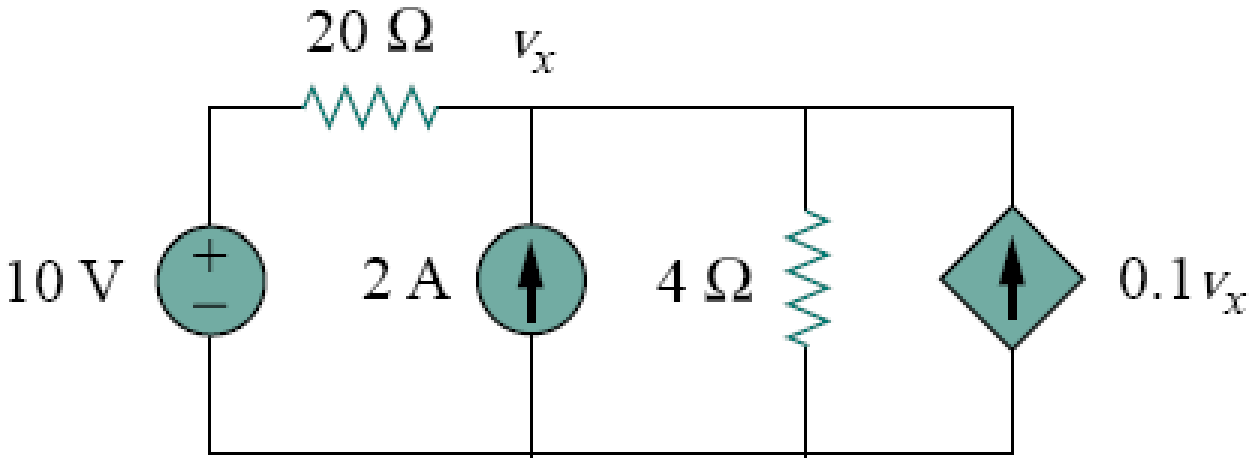
Determine I_0 using superposition



(-0.4706 A)

Problem 2

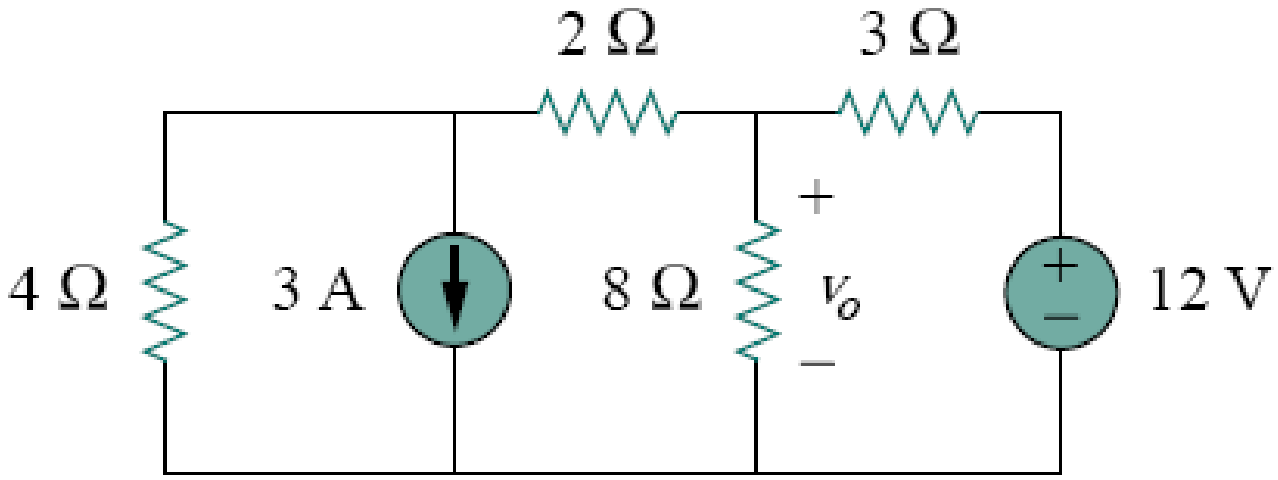
Determine v_x using superposition



(12.5 V)

Problem 3

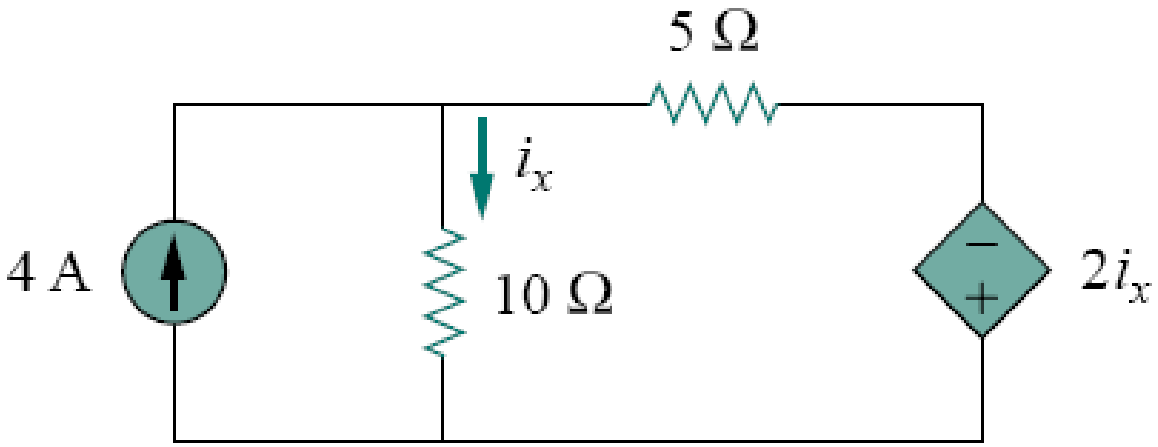
Determine v_0 using source transformation



(3.2 V)

Problem 4

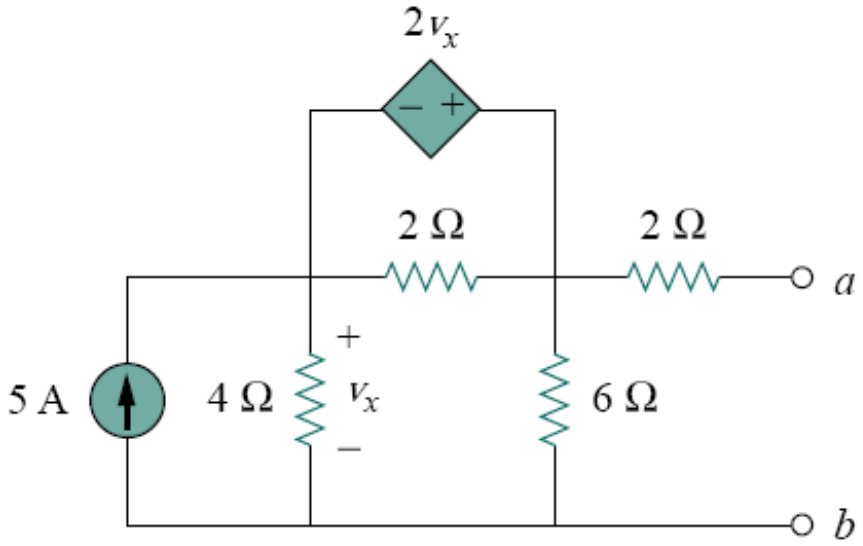
Determine I_x using source transformation



(1.176 A)

Problem 5

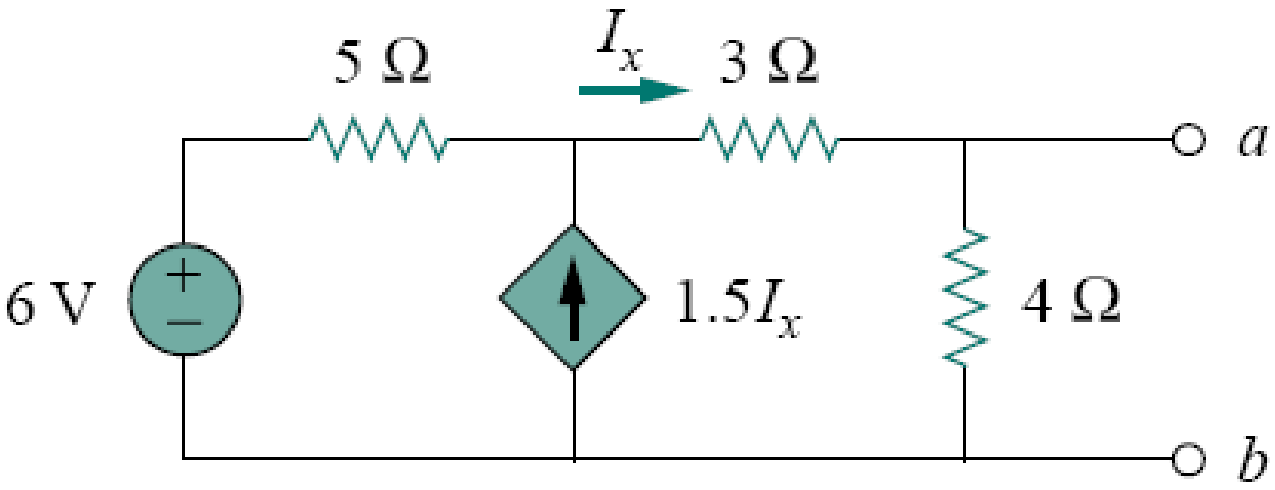
Determine the Thevenin equivalent at terminals a-b



(R_{Th}=6Ω, V_{Th}=20 V)

Problem 6

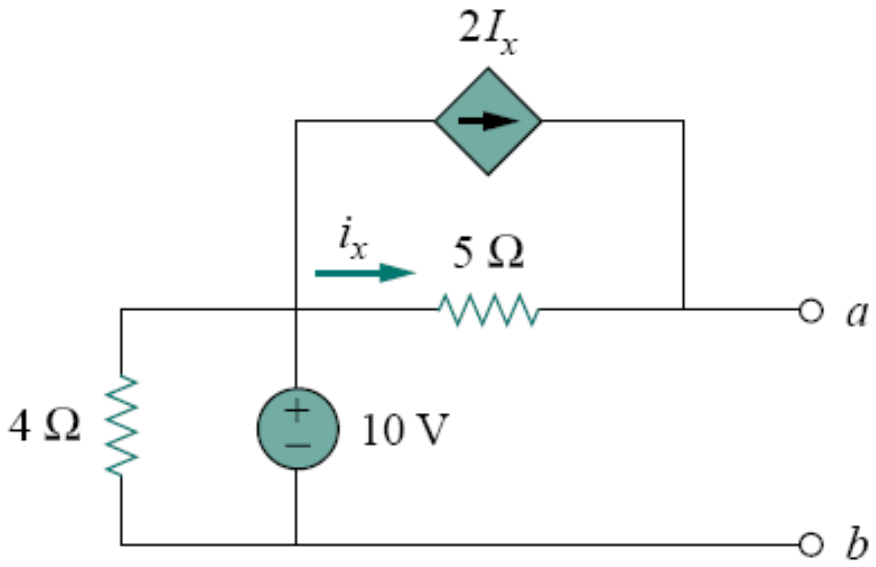
Determine the Thevenin equivalent at terminals a-b



(RTh=0.44Ω, VTh=5.33 V)

Problem 7

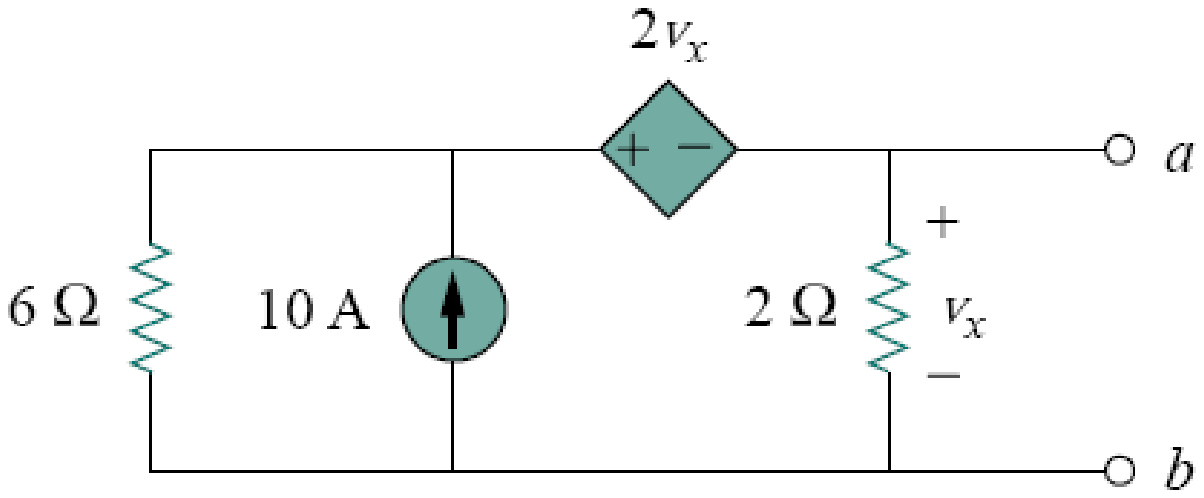
Determine the Norton equivalent at terminals a-b



(R_N=5Ω, I_N=7 A)

Problem 8

Determine the Norton equivalent at terminals a-b



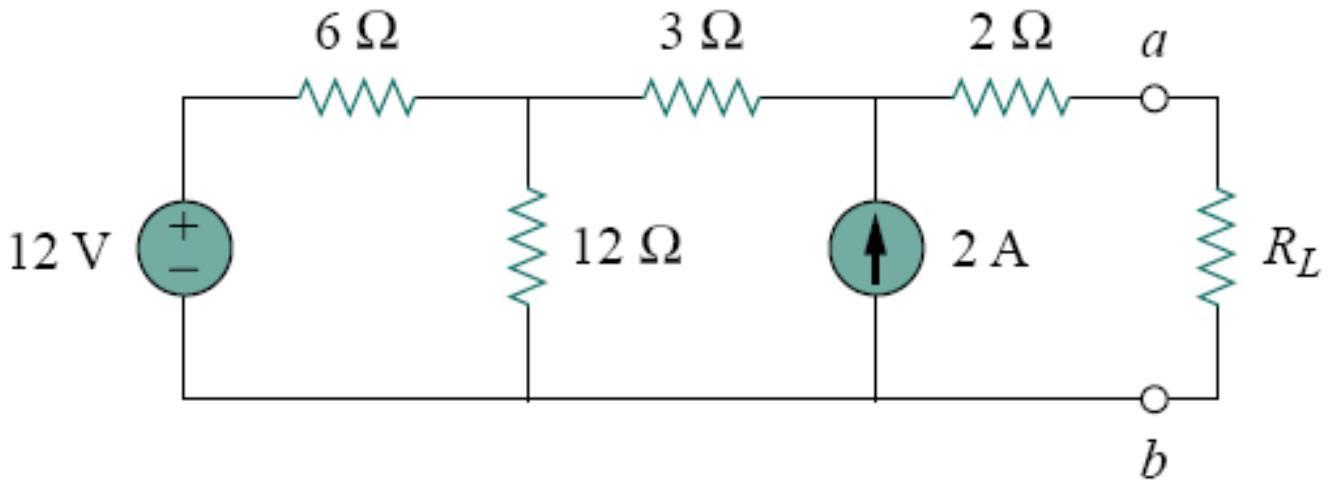
(R_N=1Ω, I_N=10 A)

Problem 9

Determine

a) The value or R_L for maximum power transfer

b) The maximum power transfer



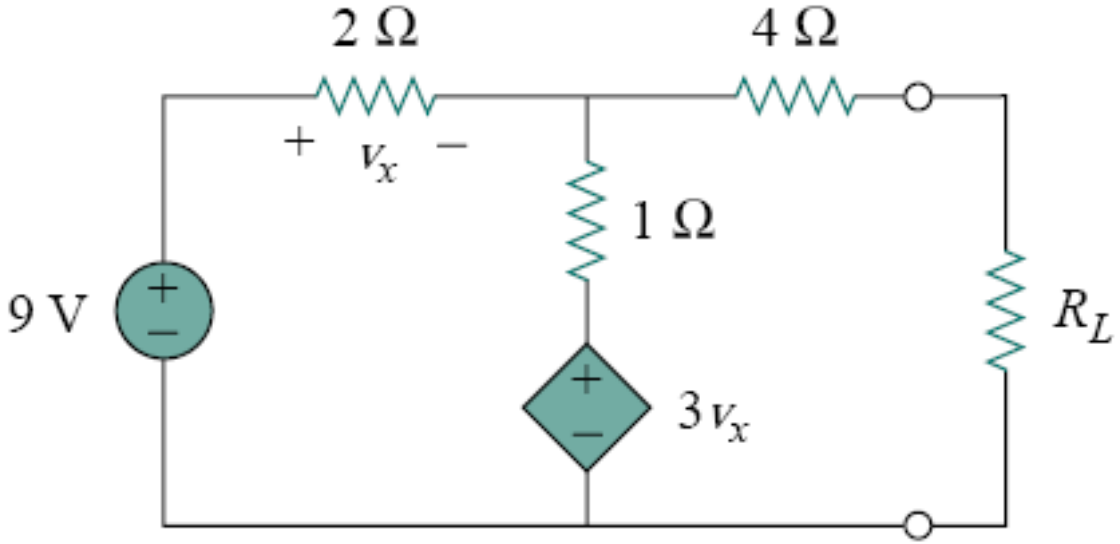
(R_L=9Ω, pmax=13.44 W)

Problem 10

Determine

a) The value or R_L for maximum power transfer

b) The maximum power transfer



(R_L=4.22Ω, pmax=2.901 W)