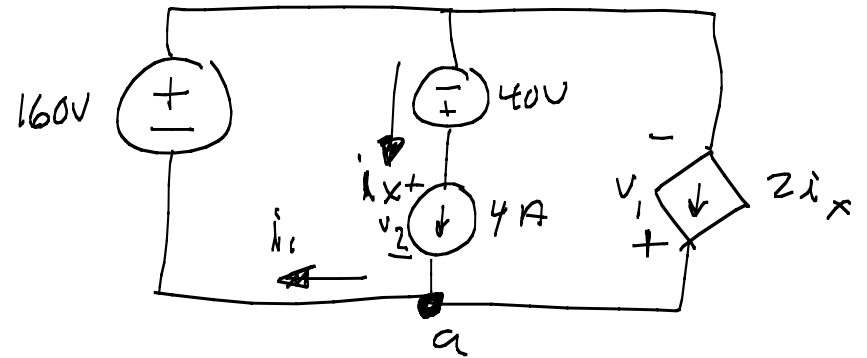


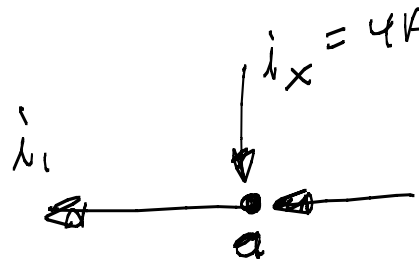
Problem 1

Determine

$$P_{\text{absorbed}} = P_{\text{developed}}$$



KCL Node a



$$i_1 - 4A - 8A = 0$$

$$2i_x = 2(4A) = 8A$$

$$i_1 = 12A$$

KVL (Left, cw)

$$-160V - 40V + v_2 = 0$$

$$v_2 = 200V$$

KVL (Perimeter, cw)

$$-160V - v_1 = 0$$

$$v_1 = -160V$$

$$P_{160V} = -vi = -(160V)(12A) = -1920W \text{ (developed)}$$

$$P_{40V} = -vi = -(40V)(4A) = -160W \text{ (developed)}$$

$$P_{4A} = vi = (200V)(4A) = 800W \text{ (absorbed)}$$

$$P_{2ix} = -vi = -(-160V)(8A) = 1280W \text{ (absorbed)}$$

$$P_{\text{developed}} = 1920W + 160W = 2080W$$

$$P_{\text{absorbed}} = 800W + 1280W = 2080W$$

$$P_{\text{developed}} = P_{\text{absorbed}}$$