Week 3
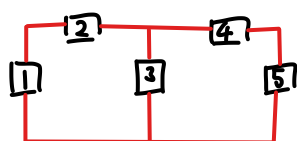
1.17 Figure 1.28 shows a circuit with five elements. If $p_1 = -205W$, $p_2 = 60W$, $p_4 = 45W$, $p_5 = 30W$, calculate the power p_3 received or delivered by element 3.
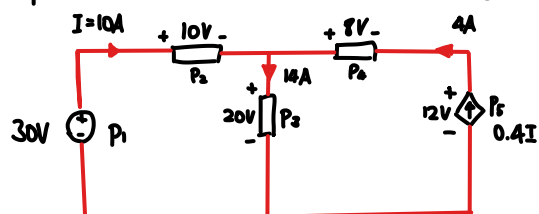

$$\Sigma P = P_1 + P_2 + P_3 + P_4 + P_5 = 0$$

$$-205 + 60 + P_3 + 45 + 30 = -70 + P_3$$

Answer : 70W

1.18 Find the power absorbed by each of the elements in Fig. 1.29

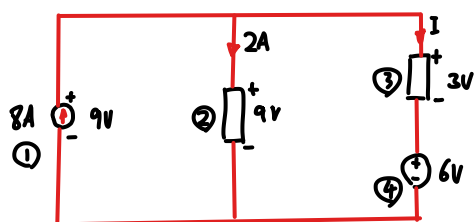$$P_1 = 30 \times (-10) = -300$$
$$P_2 = 10 \times 10 = 100$$
$$P_3 = 20 \times 14 = 280$$
$$P_4 = 8 \times (-4) = -32$$
$$P_5 = 12 \times (-4) = -48$$

1.19 Find I and the power absorbed by each element in the network of Fig. 1.30
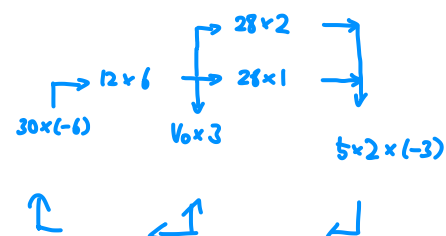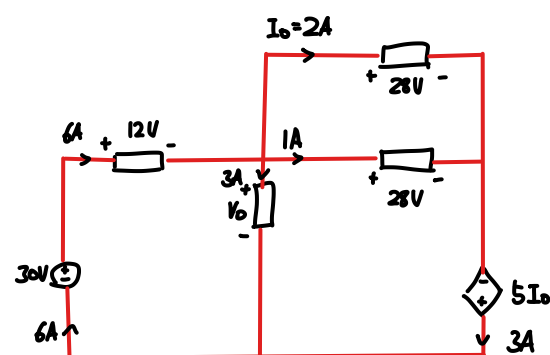

$$I = 8 - 2 = 6A$$
$$P_① = 9 \times (-8) = -72W$$
$$P_② = 9 \times 2 = 18W$$
$$P_③ = 3 \times 6 = 18W$$
$$P_④ = 6 \times 6 = 36W$$

1.20 Find V_0 and the power absorbed by each element in the circuit of Fig. 1.31

$$30 \times (-6) \qquad 12 \times 6 \qquad 28 \times 2$$
$$\qquad V_0 \times 3 \qquad 28 \times 1$$
$$\qquad 5 \times 2 \times (-3)$$

$$\Sigma P = -180 + 72 + 3V_0$$
$$+ 56 + 28 - 30$$
$$= 3V_0 - 54 = 0$$

Answer : $V_0 = 18V$