Háskóli Íslands
Verkfræðideild
Rafmagns- og tölvuverkfræðiskor

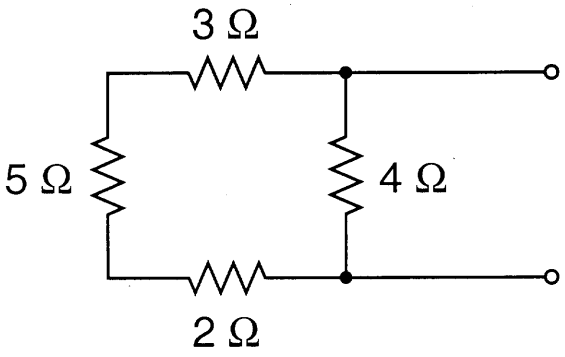
Vor 2007

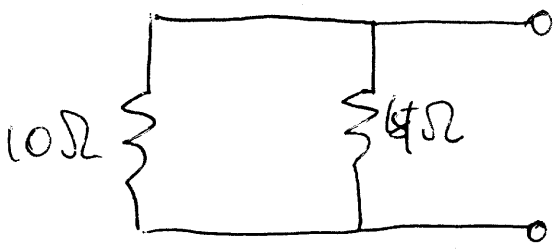
08.31.01 Greining Rása

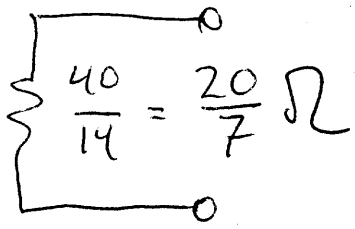
Miðsvetrarpróf II

19. febrúar 2007 kl. 11:40 - 13:10

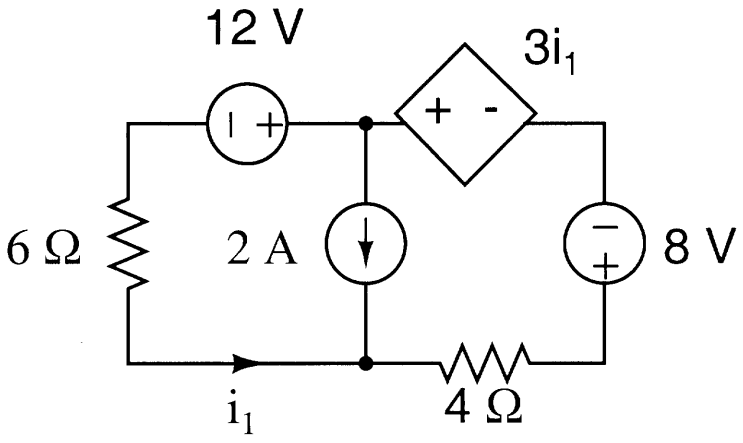
1. (10) Finnið Thévenin rásina á milli pólanna a og b.







2. (25) Rita skal eina jöfnu sem nægir til að finna i_1. Finna skal i_1.



$$0 = 6i_1 + 4(i_1 + 2) + 8 - 3i_1 + 12$$

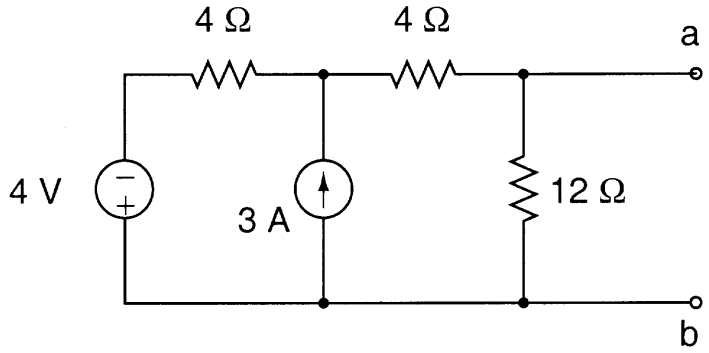
eða

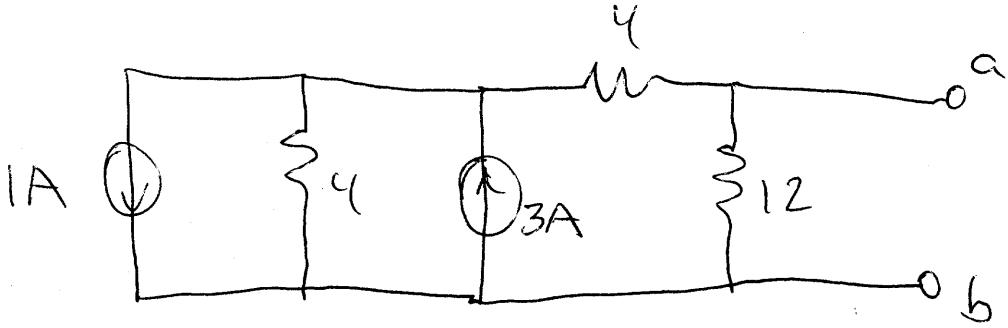
$$0 = 7i_1 + 28$$

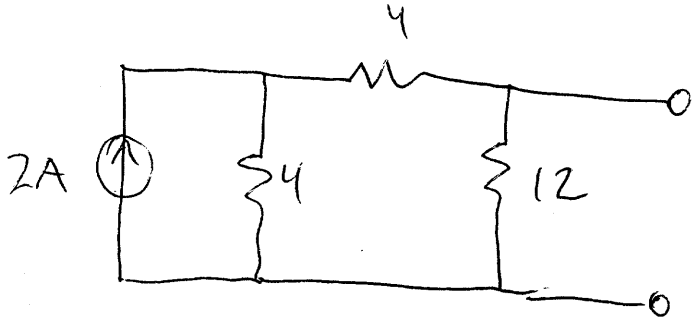
eða

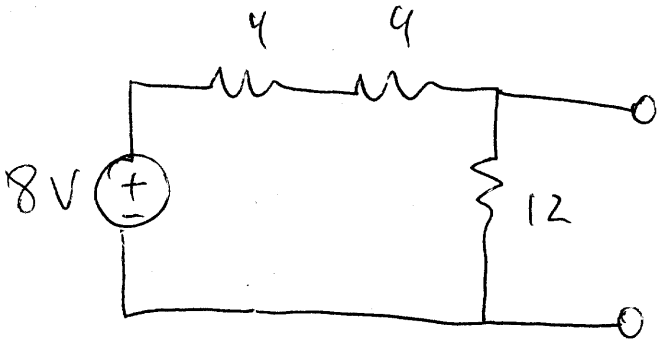
$$i_1 = -4 \text{ A}$$

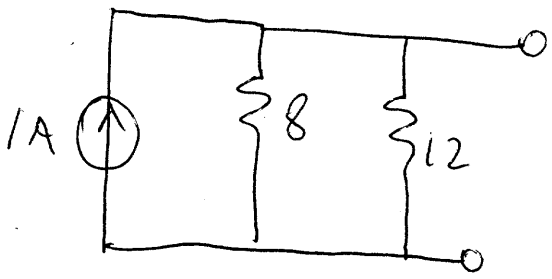
3. (30) Finnið Thévenin rásina á milli pólanna a og b.

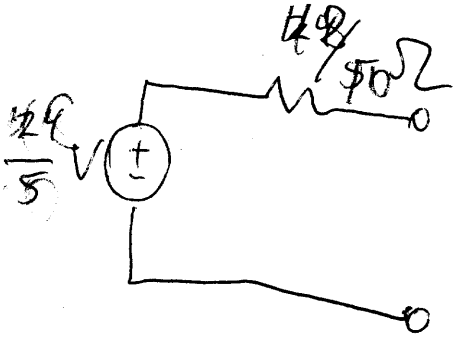




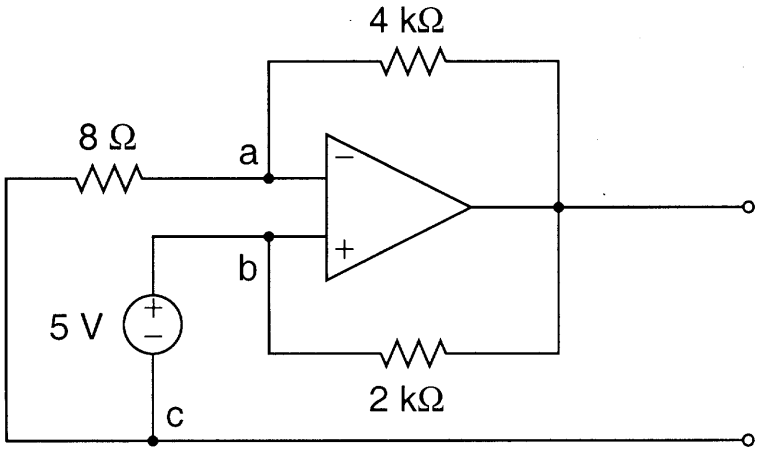








4. (35) Finna jafngildisviðnámið milli pólanna b og c. Gerið ráð fyrir að aðgerðarmagnarinn sé fullkominn. Sýna útreikninga.



Punktur a:

$$\frac{V_o - V_a}{4k} + \frac{(-V_a)}{8} = 0 \qquad V_a = V_b = 5\ V$$

Punktur b:

$$i_b = \frac{V_b - V_o}{2k} = \frac{V_a - V_o}{2k}$$

en

$$V_a - V_o = -\frac{V_a}{8} \times 4000 = -\frac{20000}{8} = -2500$$

svo

$$i_b = \frac{-2500}{2000} = -\frac{5}{4}$$

og

$$R_{eq} = \frac{V_s}{i_b} = \frac{5}{-5/4} = -4\ \Omega$$