

Exam #2

Next Thursday, 10/25

9:30 AM - 10:45 AM

LIBR 3A in Pocahontas

TAB 115 in IF

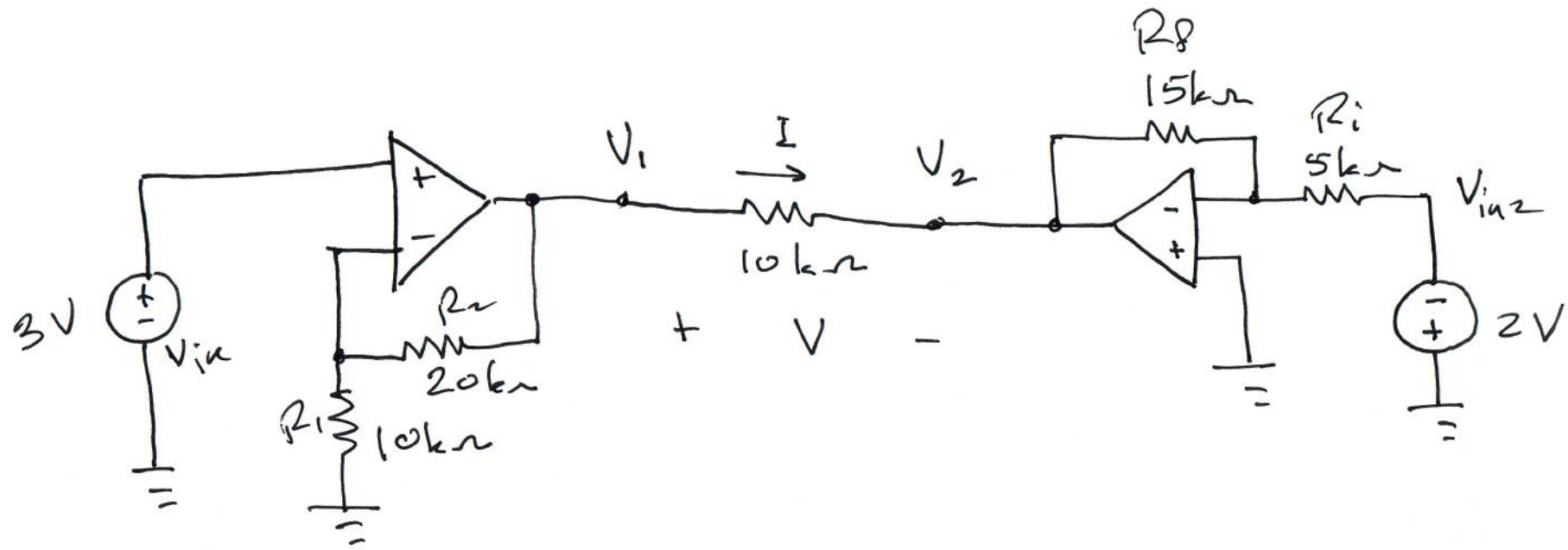
2. Mesh Analysis

* 4. Linearity / Superposition w/o Controlled Sources

F.E. [Thévenin / Norton / ST / Max. Power
Controlled (or Dependent) Sources

* 3. Op. Amps

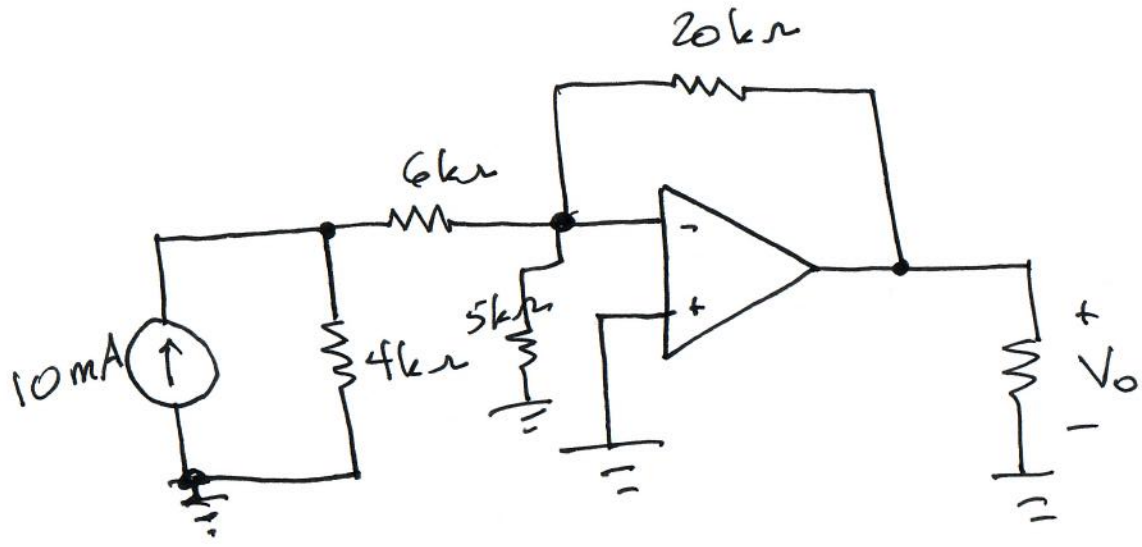
1. Matrix Equation to Solve (no partial credit)
(3rd order)

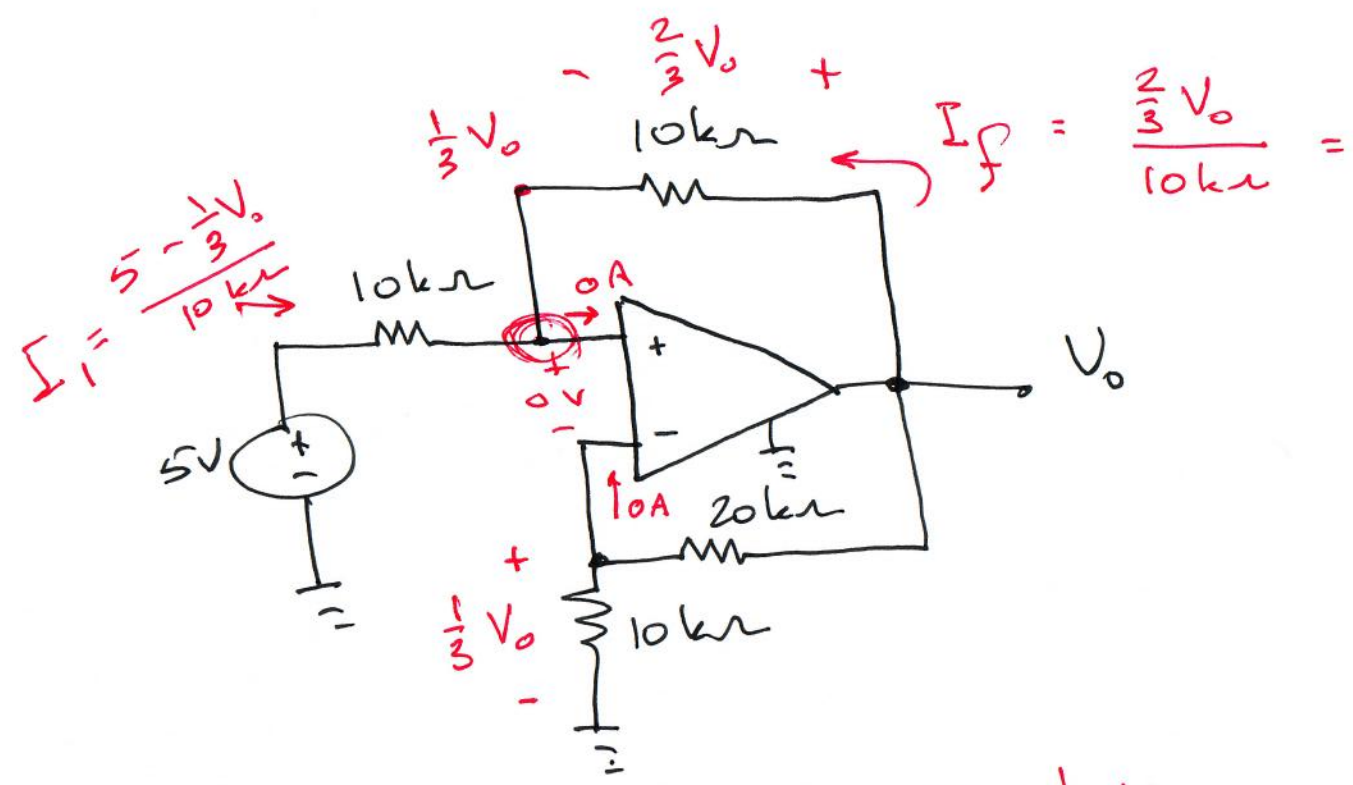


$$\begin{aligned}
 V_1 &= \left(1 + \frac{R_2}{R_1}\right) V_{in} \\
 &= 3 \cdot 3\text{V} \\
 &= 9\text{V}
 \end{aligned}$$

$$\begin{aligned}
 V_2 &= -\frac{R_f}{R_i} V_{in2} \\
 &= -\frac{15\text{k}\Omega}{5\text{k}\Omega} (-2\text{V}) \\
 &= 6\text{V}
 \end{aligned}$$

$$I = \frac{9 - 6}{10\text{k}\Omega} = 3\text{mA} = 300\mu\text{A}$$

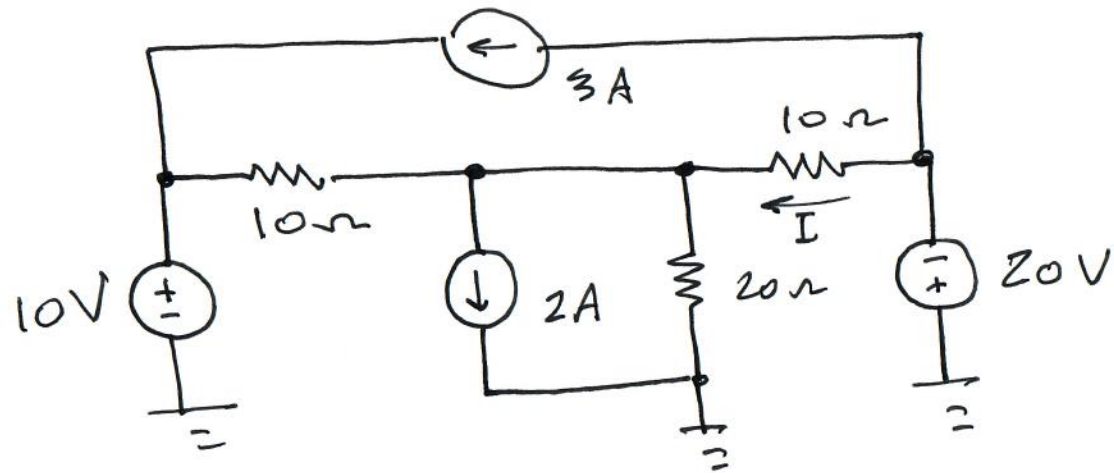




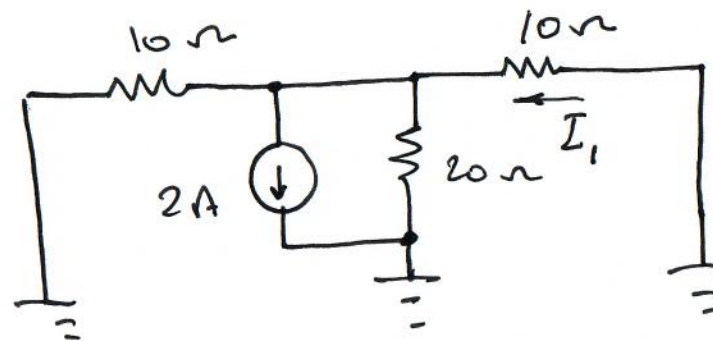
$$\frac{5 - \frac{1}{3} V_0}{10k\Omega} + \frac{\frac{2}{3} V_0}{10k\Omega} = 0$$

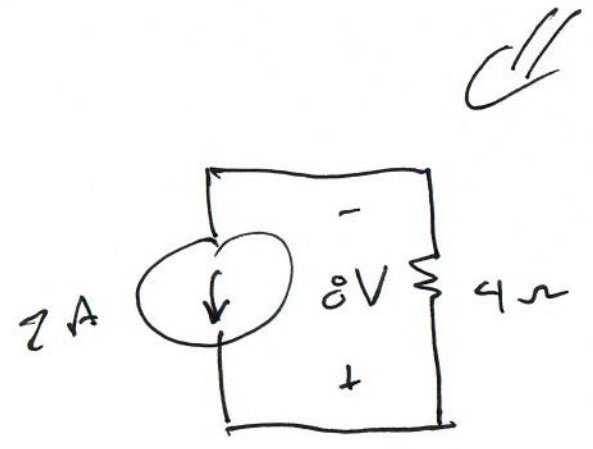
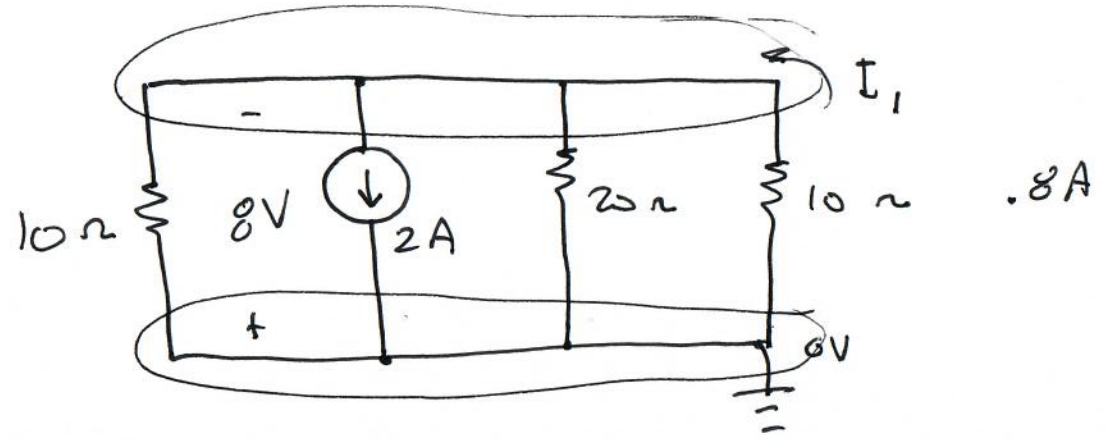
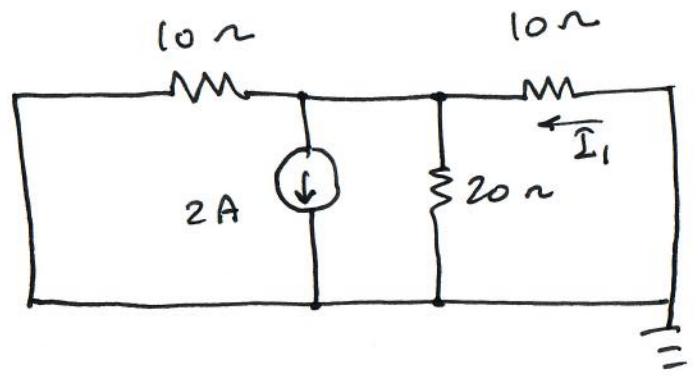
$$5 + \frac{1}{3} V_0 = 0$$

$$V_0 = -15V$$



Use superposition to determine the value of I.





$$I_1 = K_1(2A) + K_2(3A) + K_3(10V) + K_4(20)$$

$$K_1(2A) = .8A$$

$$K_1 = \frac{.8}{2} = .4$$

For the exam:

Calculator

One $8\frac{1}{2}$ " \times 11" page of notes

$$\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 7 \\ 3 \\ 2 \end{bmatrix}$$

$$y = 3$$