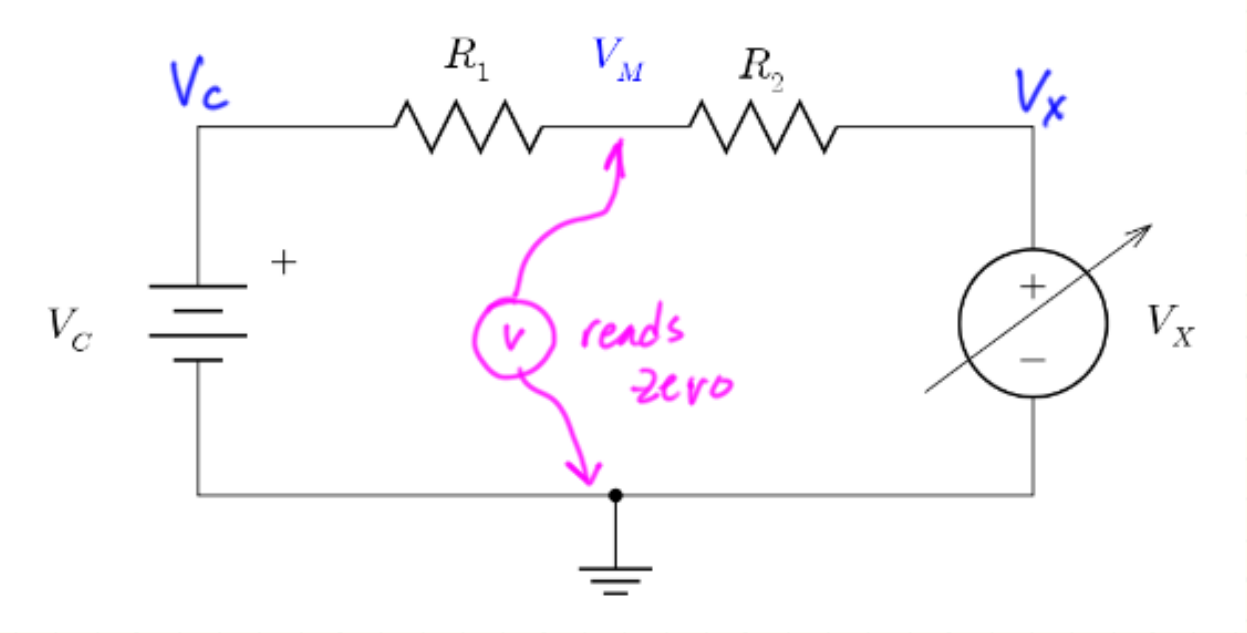
How should the value of the variable voltage source V_X be adjusted to cause the measured voltage at node M to be zero?



$$\Rightarrow \quad -\frac{V_C}{R_1} = \frac{V_X}{R_2}$$

$$\Rightarrow \quad \boxed{-\frac{R_2}{R_1} V_C = V_X}$$

Check work:

→ V_X equation evaluates to a voltage

→ use nodal analysis

$$M: \quad \frac{V_M - V_C}{R_1} + \frac{V_M - V_X}{R_2} = 0$$

$$\Rightarrow \quad -\frac{V_C}{R_1} - \frac{V_X}{R_2} = 0$$

→ V_X is opposite sign of V_C (V_M is always bounded by V_C & V_X)