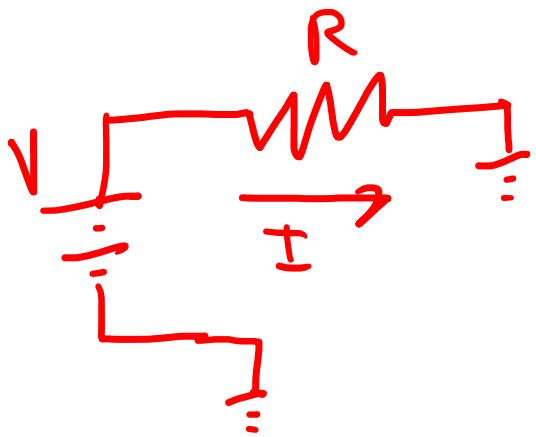
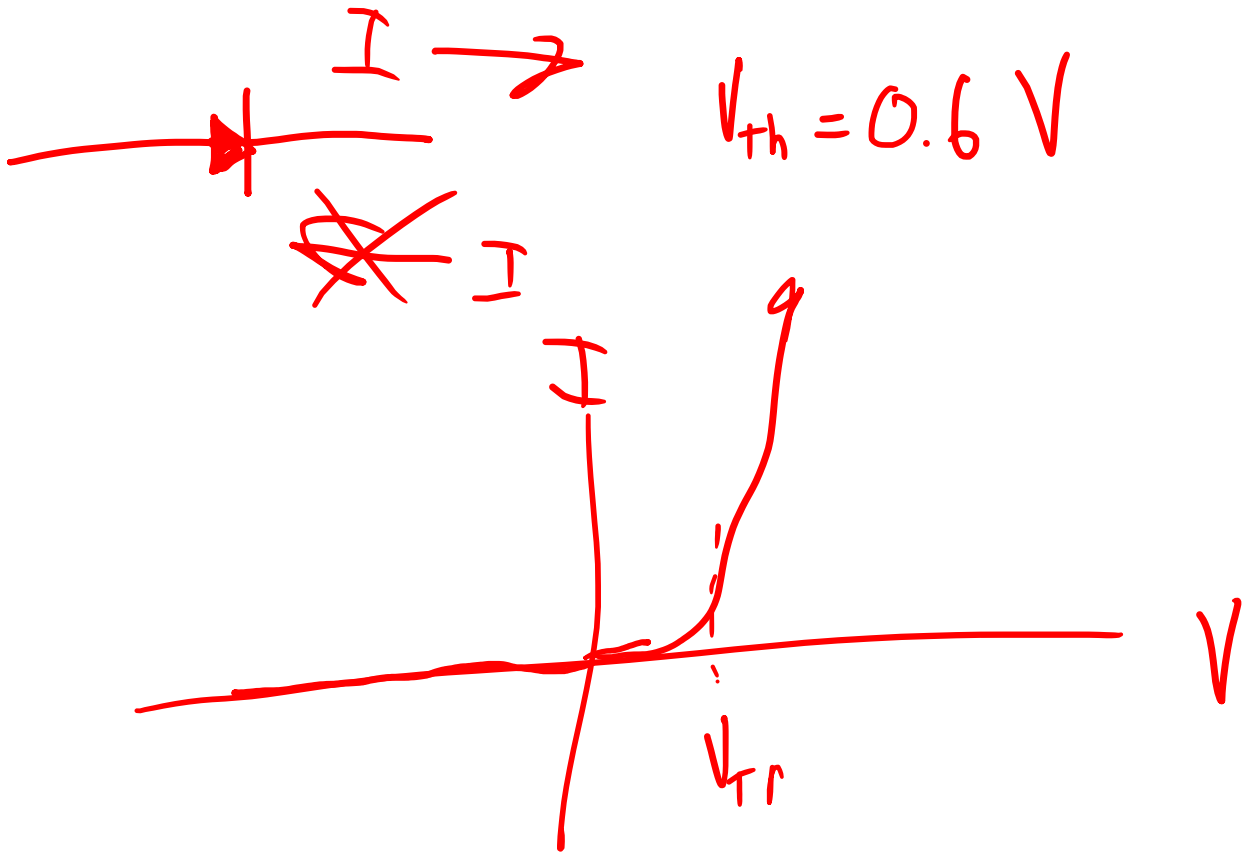
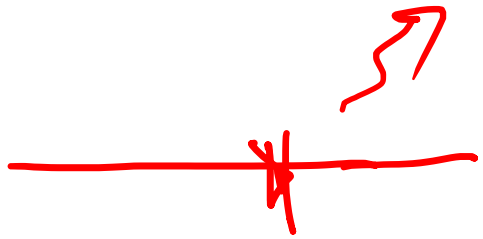
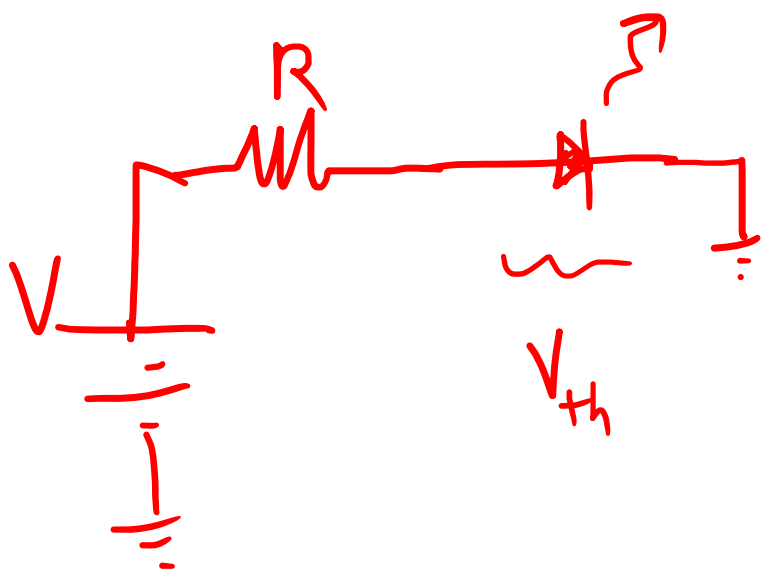
Ohms Law



$$V = IR$$


I
$V_{th} = 0.6\ V$
I
I
V
V_{TH}



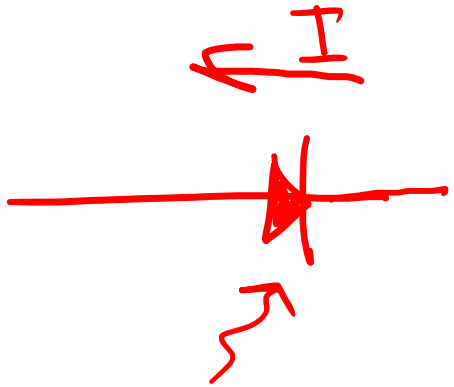


I

V_{th}

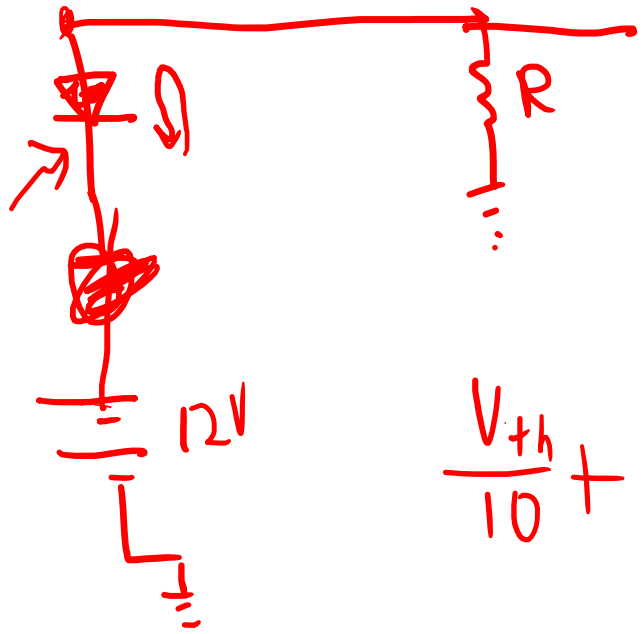
~20 mA

$$V_{th} = V - IR$$



$$P = AI$$

Φ on λ, $\frac{1}{\text{red light}} \sim 0.5 \frac{A}{W}$



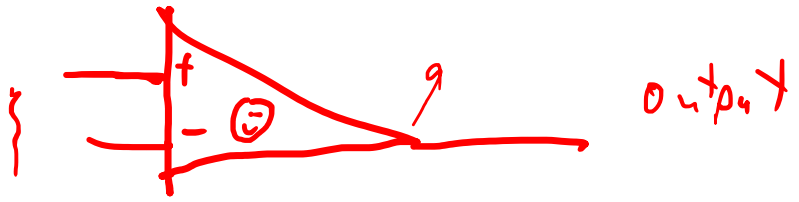
$V = IR$

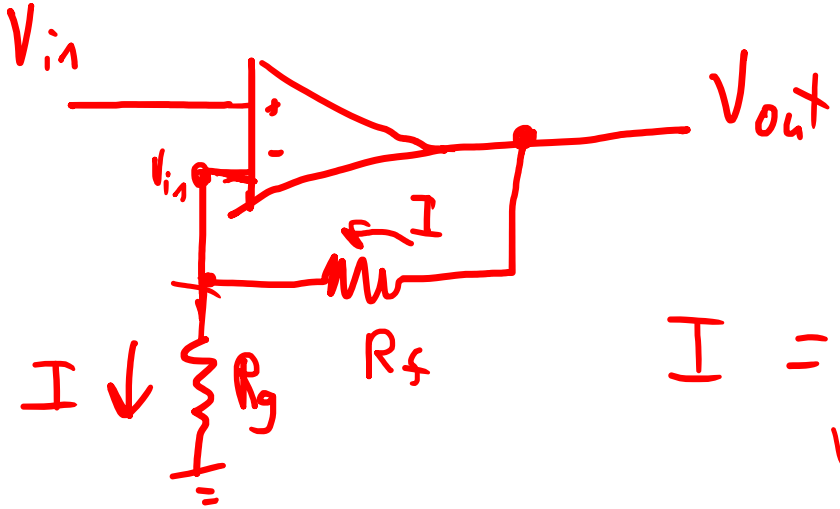
$\frac{V_{th}}{10}$

$\frac{V_{th}}{10} + 12V$

$\tau = RC$

Non-inverting Amp.



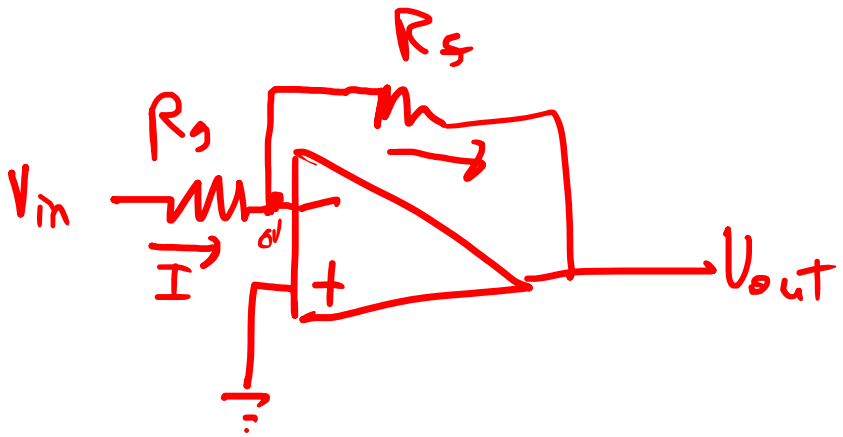


$$I = \frac{V_{in}}{R_g} = \frac{V_{out} - V_{in}}{R_f}$$

$$G = \left(1 + \frac{R_f}{R_g}\right) V_{in}$$

$$\frac{V_{out}}{R_f} = \frac{V_{in}}{R_g} + \frac{V_{in}}{R_f} \qquad V_{out} = \frac{R_f}{R_g} V_{in} + V_{in}$$

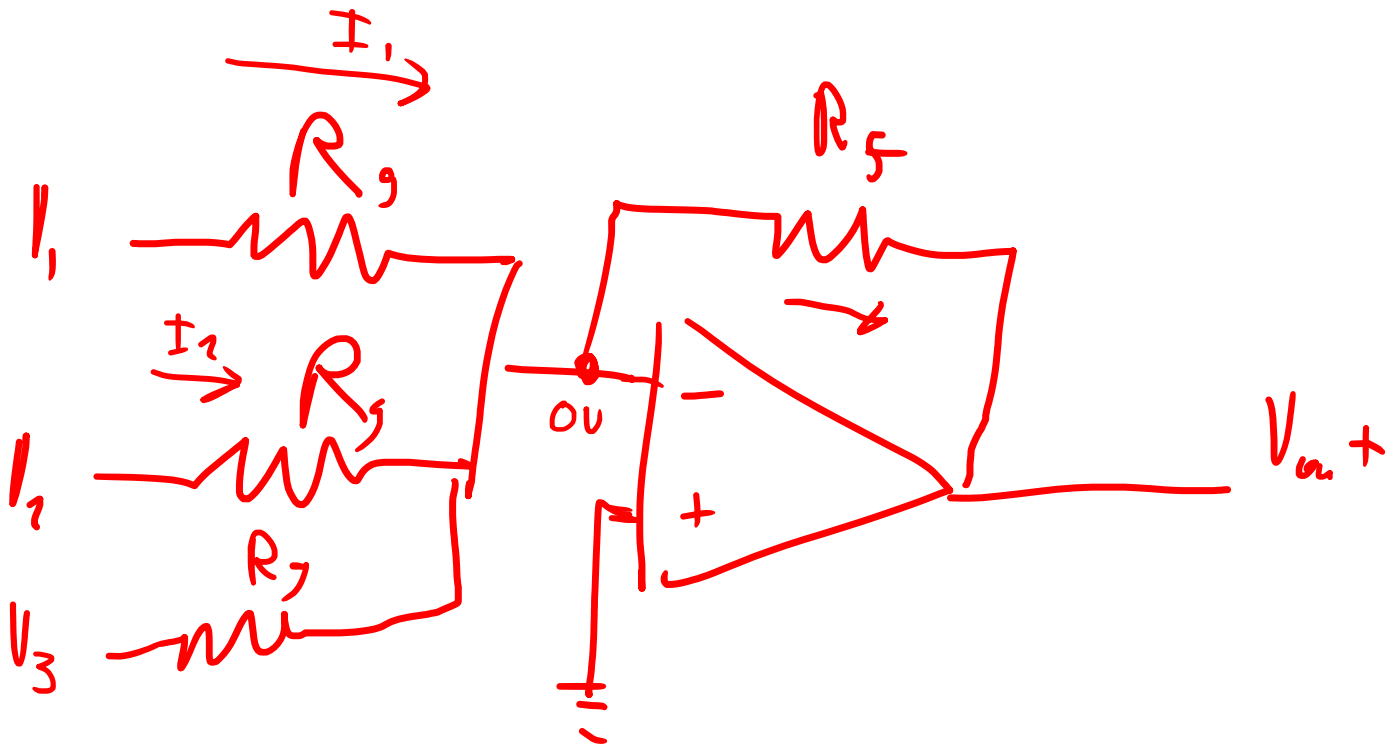
Inverting Amp



$$I = \frac{V_{in} - 0}{R_g} = \frac{0 - V_{out}}{R_f}$$

$$\frac{V_{in}}{R_g} = -\frac{V_{out}}{R_f}$$

$$V_{out} = -\frac{R_f}{R_g} V_{in}$$



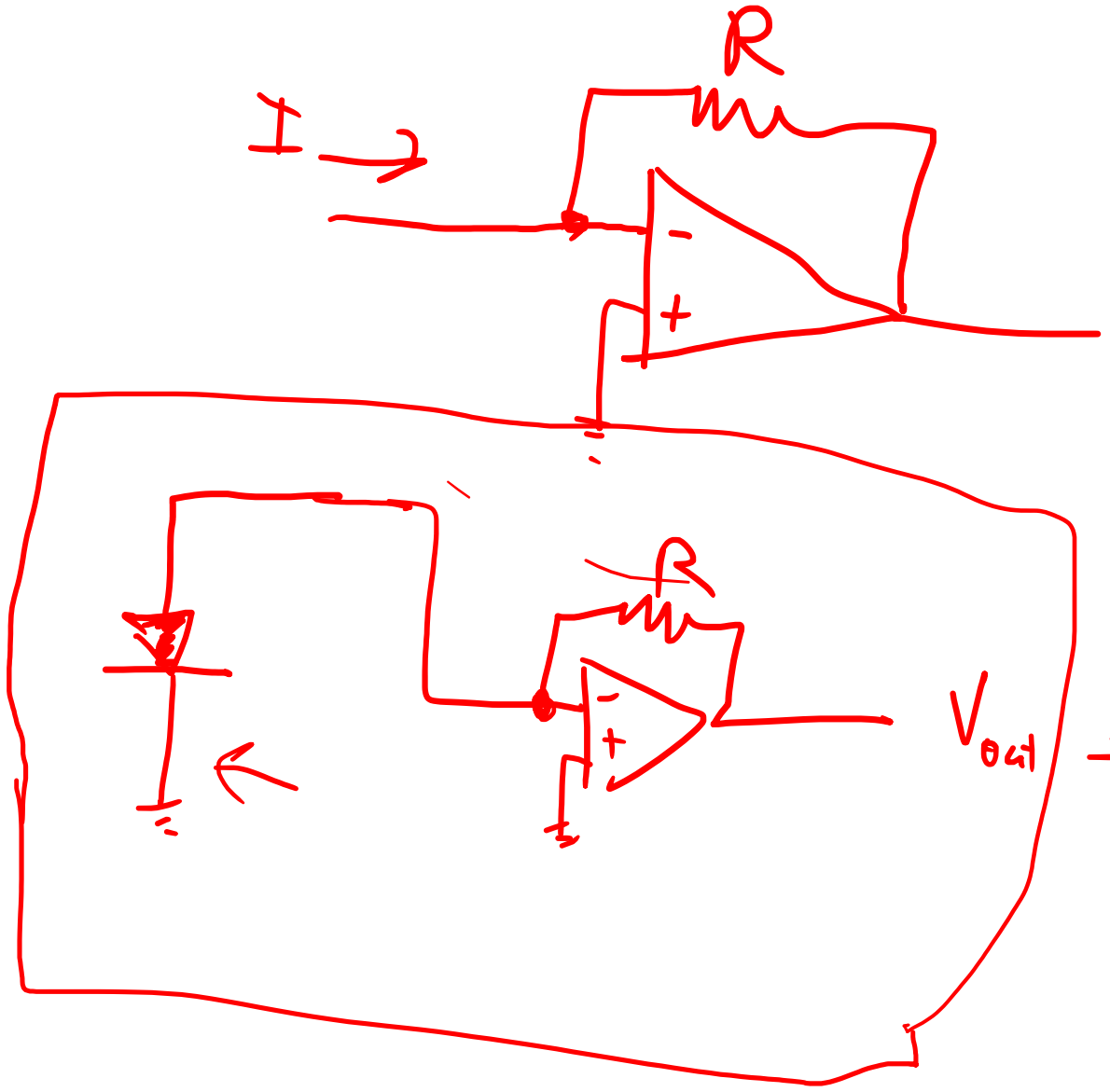
Summ

$$I_1 = \frac{V_1 - 0}{R_1}$$

$$I_2 = \frac{V_2 - 0}{R_2}$$

$$I_5 = I_1 + I_2 = \frac{V_1}{R_1} + \frac{V_2}{R_2} = \frac{0 - V_{out}}{R_5}$$

$$V_{out} = -\frac{R_5}{R_1}(V_1 + V_2)$$



Transimpedance Amplifier

$$I = \frac{0 - V_{out}}{R}$$

$$V_{out} = -IR$$

$$V_{out} = -IR$$

$\tau = RC$

Speed

Linear