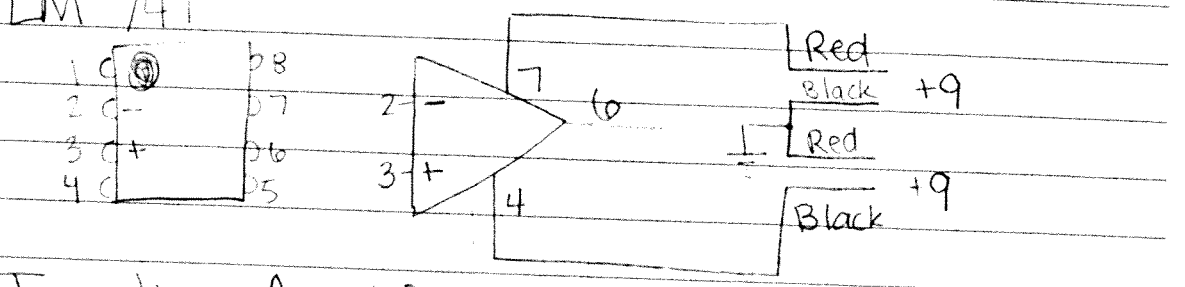
Lab 7: Op Amps

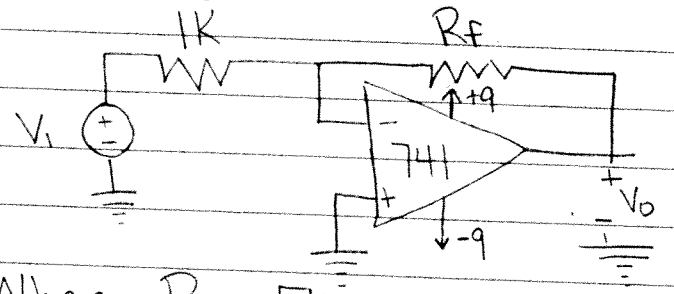
10/3/13

Inverting and non-Inverting Amplifier

LM 741



Inverting Amplifier



1) When $R_f = 510\ \Omega$, we measured:

$V_o = -2.5$

$\frac{V_o}{V_s} = \frac{-2.5}{5} \approx -.5$ gain

When $R_f = 10k$, we measured:

$V_o = -6.9$, but that is because it is saturated

$\frac{V_o}{V_s} \approx -50$ gain

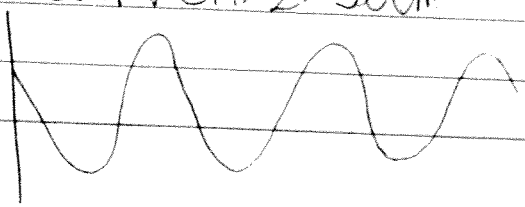
When $R_f = 100k$, we measured:

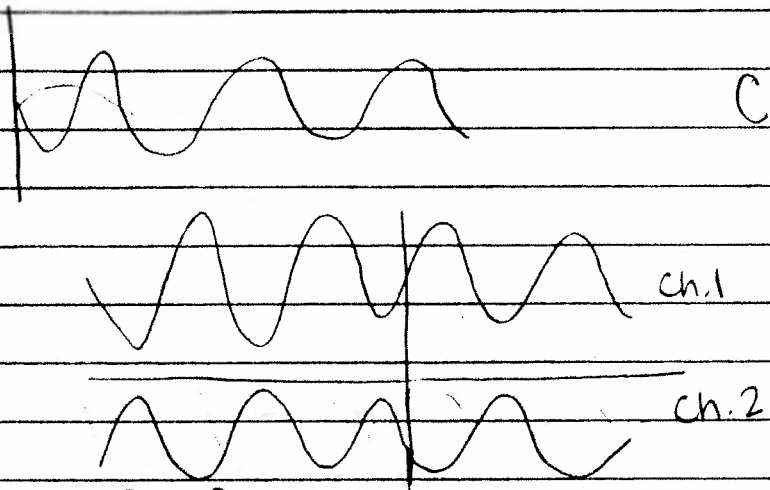
$V_o = -7.02$, but that is because it is saturated

$\frac{V_o}{V_s} \approx -500$ gain

2) 10/8/13

Ch. 1: 500mv Ch. 2: 500m





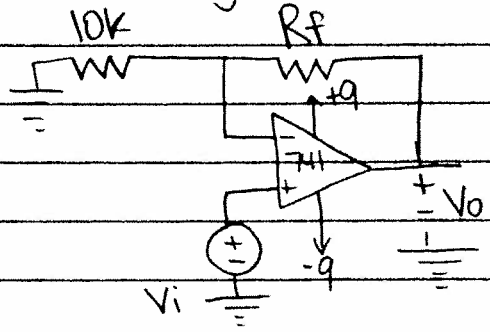
Ch1: Pk-Pk 700mV
Ch1 Mean:: 8.82mV
Ch2 Pk-Pk 380mV
Ch.2 Mean: 7.52mV
Ch1 Pos. Width 498µs

$\frac{\text{Ch.2}}{\text{Ch.1}} = \text{gain}$

$\frac{380}{700} = \text{gain}$

gain = .540 this matches our calculated in part 1

Noninverting amplifier

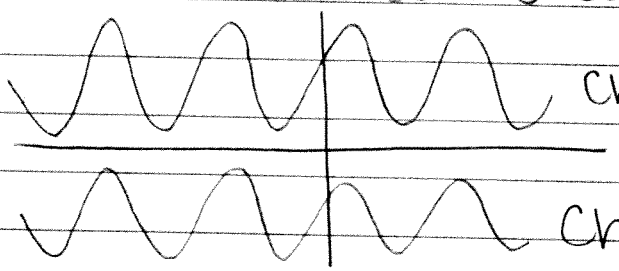


1) When Rf = 510Ω, we measured:
Between inverting and noninverting = .1mV

$\frac{Rf + 10k}{10k} = \frac{.510k + 10k}{10k} = 1.05 \text{ gain}$

When $R_f = 10k$, we measured:
Between inverting and noninverting = -.1mV
$\frac{R_f + 10k}{10k} = \frac{10k + 10k}{10k} = 2.00$ gain
When $R_f = 100k$, we measured:
$\frac{R_f + 10k}{10k} = \frac{100k + 10k}{10k} = 11$ gain
Between inverting and noninverting = 4.24V, but this is because it's saturated

2)



Ch1 Pk-Pk 704mV
Ch1 Mean: -1.72mV
Ch.2 Pk-Pk 1.46V = 1460mV
Ch2 Mean 4.25mV
$\frac{\text{Ch2 Pk-Pk}}{\text{Ch1 Pk-Pk}} = \text{gain}$

$\frac{1460mV}{704mV} = \text{gain}$
gain = 2.07 this matches our calculated in part 1 with $R_f = 10k$