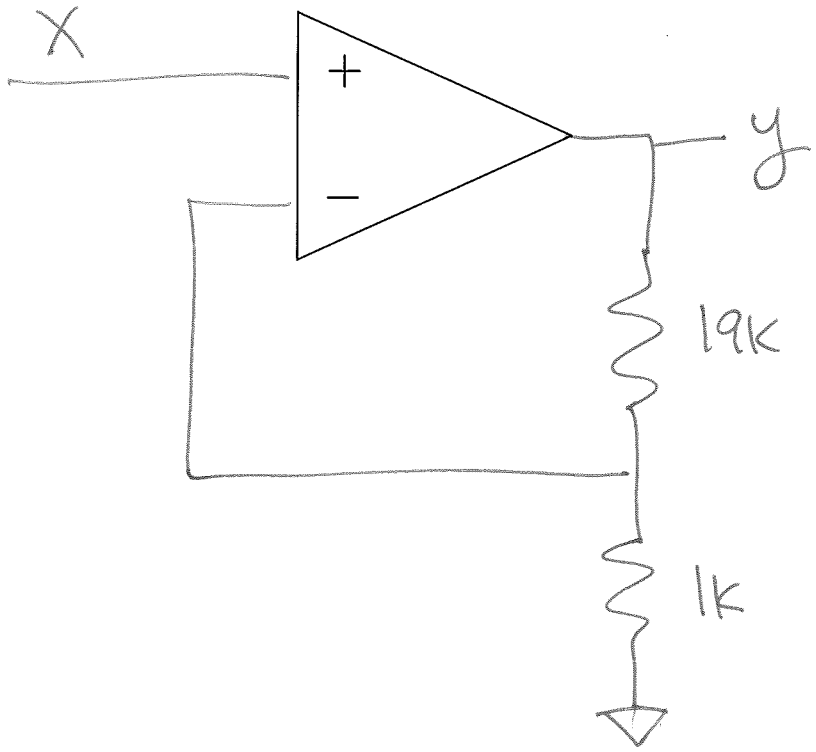
ECE 321: Quiz #1 Name _____

Operational Amplifier Circuits - November 3, 2016

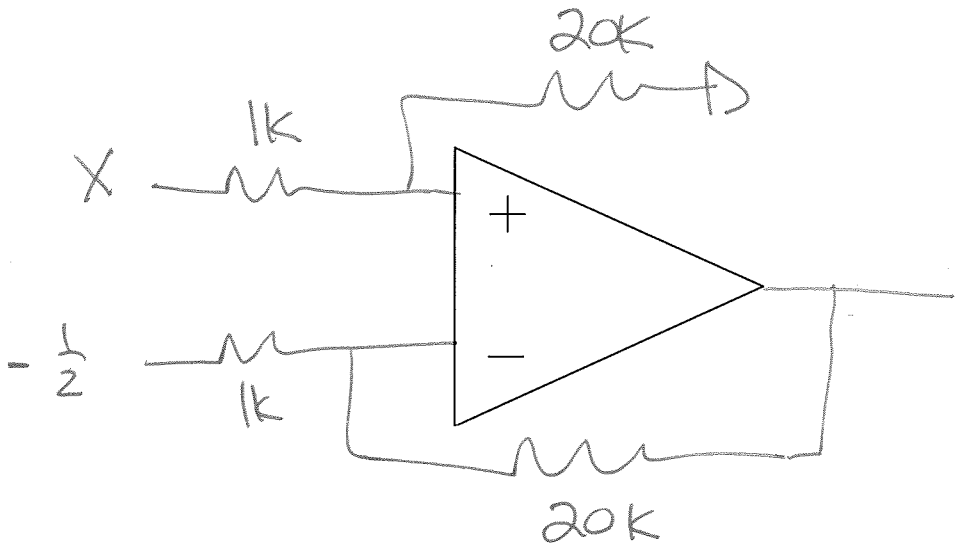
1) Design a circuit with a gain of +20

$Y = 20X$



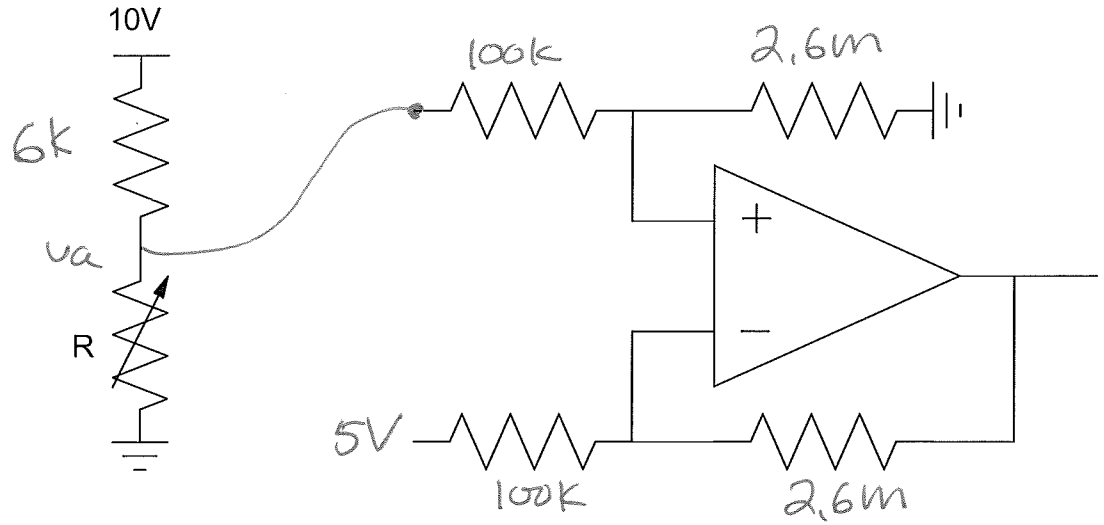
2) Design a circuit with a gain of +20 and an offset of +10V

$Y = 20X + 10$ $= 20(X - (-\frac{1}{2}))$



3) Design an op-amp circuit where the output is

- 0V when R = 6k Ohms
- 10V when R = 7k Ohms



0V = 6k

Va = 5V

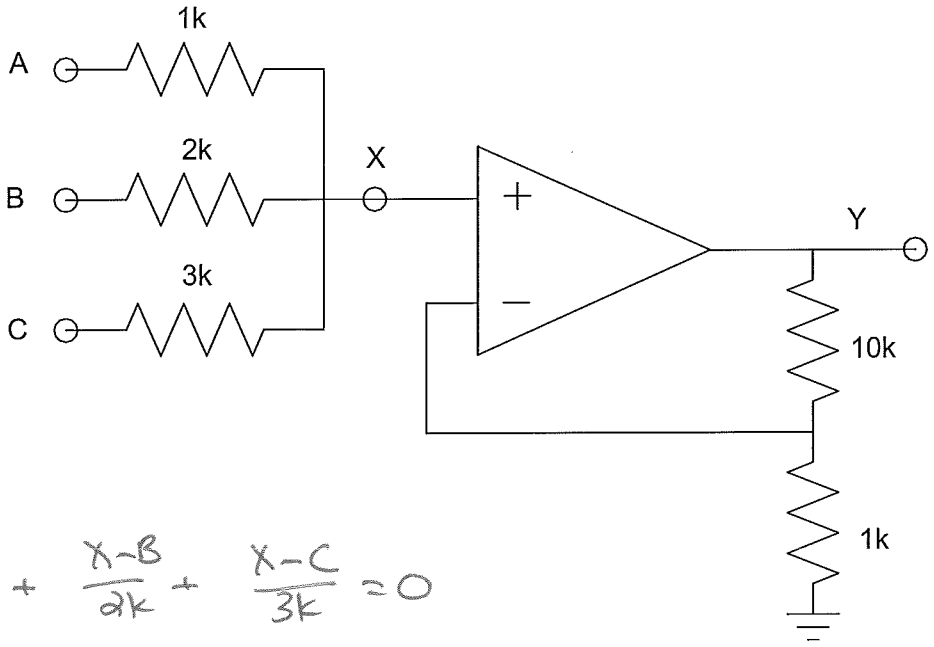
gain = 26

7k ⇒ 10V

Va = 5.38V

4) For the following circuit, determine

X = f(A, B, C) X as a funciton of (A, B, C)	$X = \frac{6A + 3B + 2C}{11}$
Y = g(X) Y as a function of X	$y = 11x$
Y = h(A, B, C) Y as a function of (A, B, C)	$y = 6A + 3B + 2C$



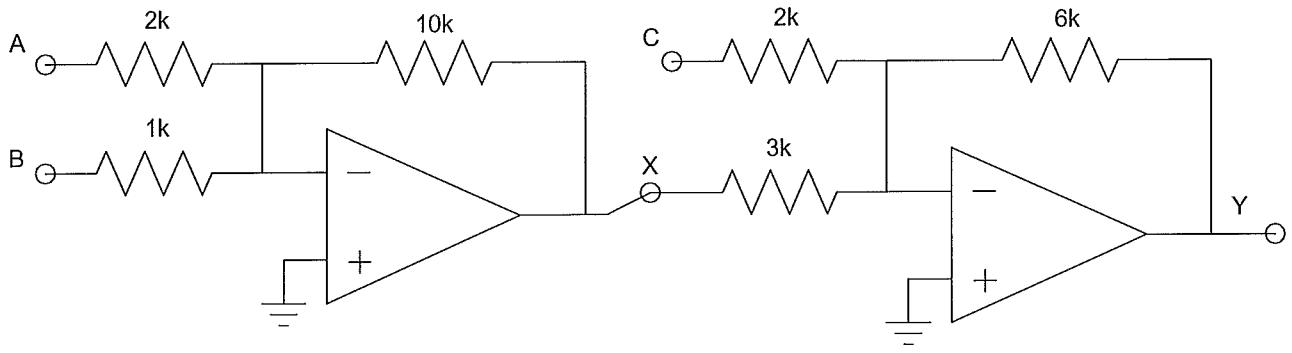
$$* \frac{6k}{6k} \quad \frac{X-A}{1k} + \frac{X-B}{2k} + \frac{X-C}{3k} = 0$$

$$6(X-A) + 3(X-B) + 2(X-C) = 0$$

$$11X = 6A + 3B + 2C$$

5) For the following circuit, determine

X = f(A, B) X as a funciton of (A, B)	X = -5A - 10B
Y = g(C, X) Y as a function of (C, X)	Y = -2X - 3C
Y = h(A, B, C) Y as a function of (A, B, C)	Y = 10A + 20B - 3C



X = -5A - 10B

Bonus! Bernie Sanders (and other dinosaurs) Trivia!!! There have been six mass extinctions in Earth's history. What caused the K-T mass extinction which wiped out the dinosaurs, 65 million years ago?

meteor that hit in the Gulf of Mexico