Electronics 2

TEST 2

Professor Cliver ENT-2156

(EEET-221 15442)

Name: _____

Class time (ex. 1 p.m.): _____

1. If $V_{IN1} = 6V, V_{IN2} = 2V, V_{O(SAT)} = \pm 13V and,\ R_L = 5K\Omega$ in figure 1, determine the output voltage V_O of the comparitor.

   (a) -13 V

   (b) 13 V

   (c) 4 V

   (d) 4.0 V

2. If $V_{IN1} = 6V, V_{IN2} = 1V, V_{O(SAT)} = \pm 13V and,\ R_L = 4K\Omega$ in figure 1, determine the output current I_L of the comparitor (the current through R_L).

   (a) 1.25 mA

   (b) 3.25 mA

   (c) 0.88 mA

   (d) -3.25 mA

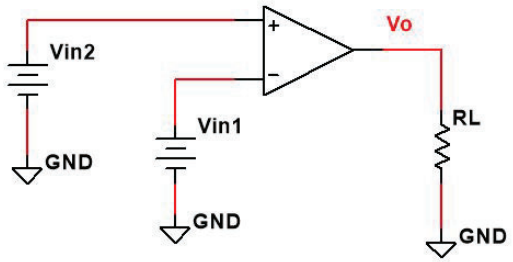


Figure 1

3. For a non-inverting amplifier with $Rf = 9K\Omega, Ri = 5K\Omega$ and the total RMS noise level referred to the input is $7\mu V$. Select the output noise level.

   (a) 12.60 μV

   (b) 19.60 μV

   (c) 7.00 μV

   (d) -12.60 μV

4. An amplifier has a common mode gain of 30 dB and a differential gain of 110 dB. What is the CMRR (common mode rejection ratio)?

   (a) 110.00 dB

   (b) 80.00 dB

   (c) 3.67 dB

   (d) 30.00 dB

5. An op-amp has a slew-rate of $5\frac{V}{\mu s}$ and is configured as a non-inverting amplifier $R_F = 9.6K\Omega \; and \; R_I = 4.2K\Omega$. If a 8.00mV peak sine wave is applied to the non-inverting input, determine the slew rate limiting frequency (maximum sine wave frequency).

   (a) 99.5 MHz

   (b) 30.3 MHz

   (c) 190.2 MHz

   (d) 227.4 MHz

6. An op-amp has a unity gain frequency of 4 MHz and is configured as a non-inverting amplifier $R_f = 10.0K\Omega \; and \; R_i = 4.4K\Omega$. Calculate the rise time (t_{CL}) associated with the amplifier.

   (a) 818.18 ns

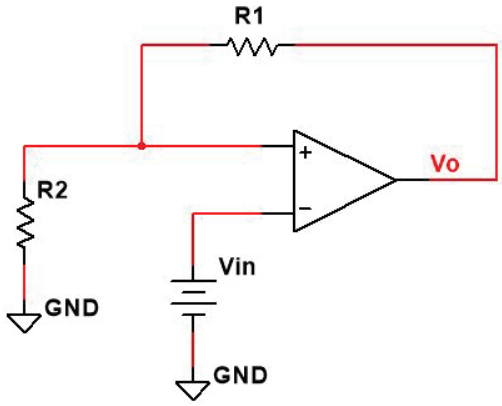
   (b) 1.22 ns

   (c) 4.00 ns

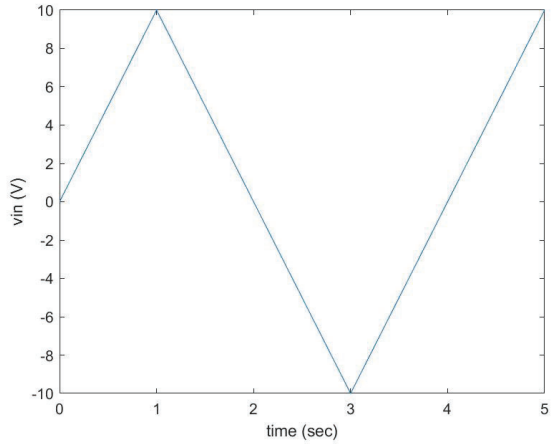
   (d) 286.36 ns

The problems on this page both use the same figure.

7. Sketch the input-output characteristic curve given $R_1 = 8.1K\Omega, R_2 = 3.1K\Omega$ *and* $V_{O(SAT)} = \pm 13V$.

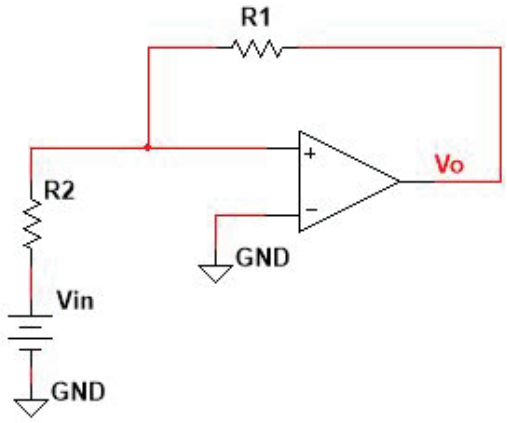


8. Sketch the output curve given the input curve and $R_1 = 8.2K\Omega, R_2 = 4.6K\Omega$ *and* $V_{O(SAT)} = \pm 14V$.

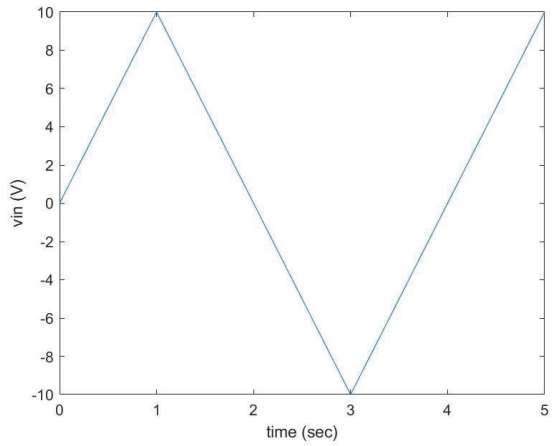


The problems on this page both use the same figure.

9. Sketch the input-output characteristic curve given $R_1 = 9.4K\Omega, R_2 = 3.3K\Omega$ *and* $V_{O(SAT)} = \pm 13V$.

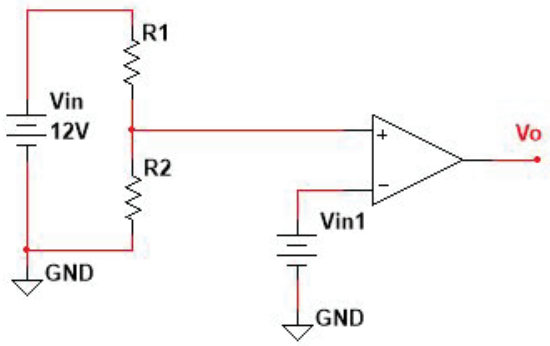


10. Sketch the output curve given the input curve and $R_1 = 9.0K\Omega, R_2 = 4.9K\Omega$ *and* $V_{O(SAT)} = \pm 13V$.

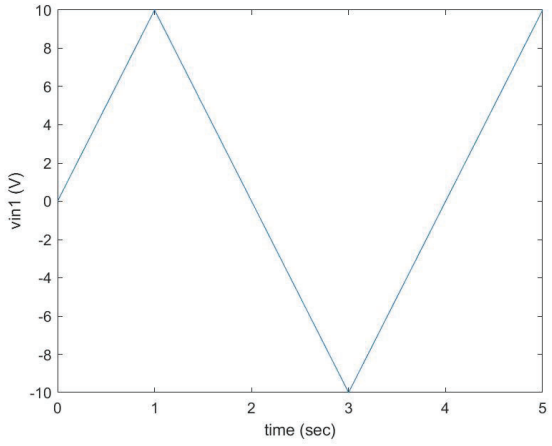


The problems on this page both use the same figure.

11. Sketch the input-output characteristic curve (input is Vin1) given $R_1 = 9.6K\Omega, R_2 = 3.9K\Omega$ *and* $V_{O(SAT)} = \pm 13V$.



12. Sketch the output curve given the input (Vin1) curve and $R_1 = 9.7K\Omega, R_2 = 3.2K\Omega$ *and* $V_{O(SAT)} = \pm 12V$.



13. What has been the most confusing point so far in the class?