Electronic Circuits **Homework 5**

1. Determine the voltage across each diode in Figure 1. (15-17)

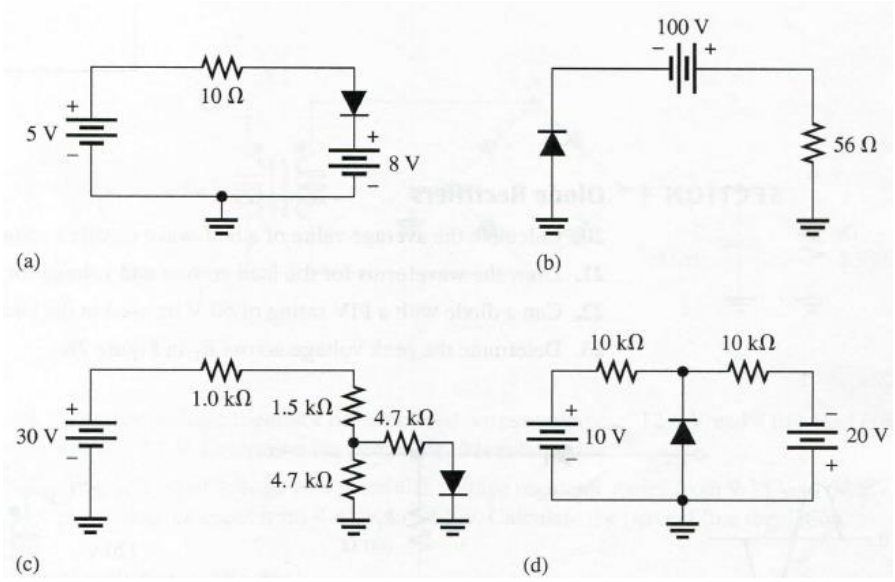

Figure 1

2. Consider the circuit in Figure 2. (15-25)
   (a) What type of circuit is this?
   (b) What is the total peak secondary voltage?
   (c) Find the peak voltage across each half of the secondary.
   (d) Draw the voltage waveform across R_L.
   (e) What is the peak current through each diode?
   (f) What is the PIV for each diode?

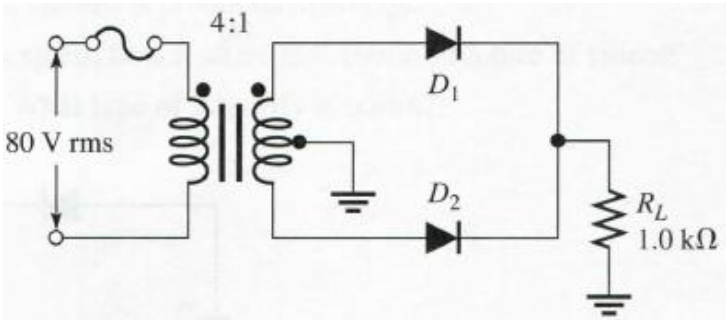

Figure 2

3. Determine the peak voltage across R_L in Figure 3. (15-23)

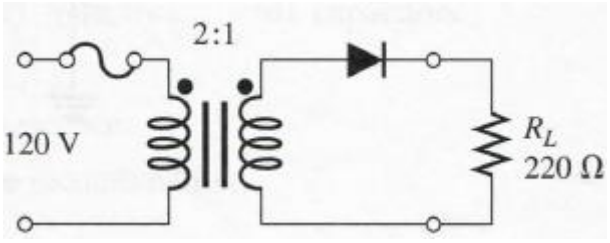

Figure 3

4. Refer to Figure 4 and draw the waveforms V_A and V_B with relation to the input waveform. (15-30)

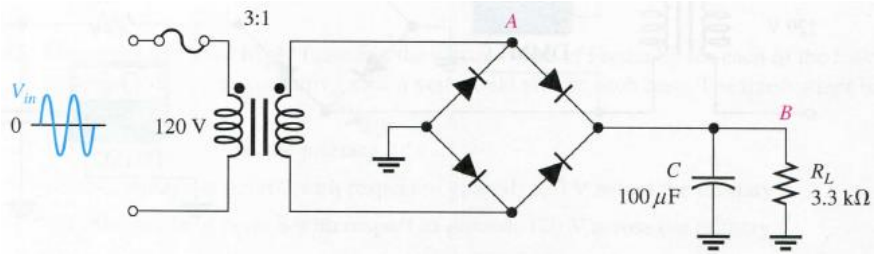

Figure 4

5. Find I_B, I_E, and I_C in Figure 5 given that α_{DC}=0.98 and β_{DC}=49. (16-5)

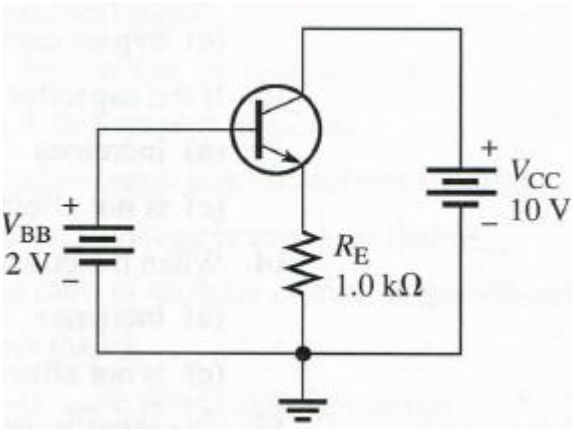

Figure 5

6. For the circuit in Figure 6, find V_B, V_E, I_E, I_C, and V_C. (16-10)

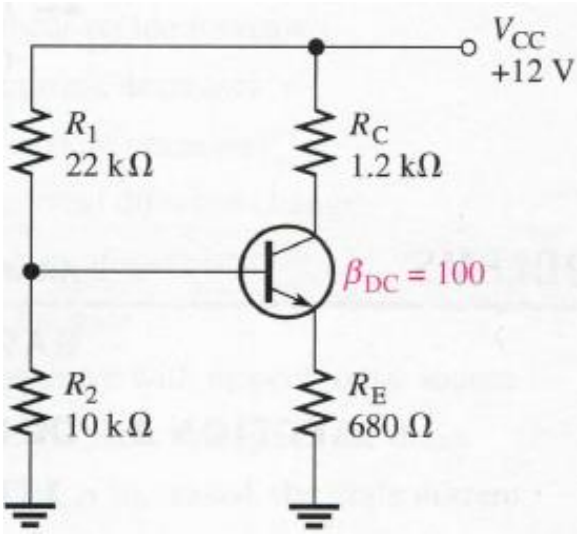

Figure 6

7. Determine the following dc values for the amplifier in Figure 7:
   (a) V_B (b) V_E (c) I_E (d) I_C (e) V_C (f) V_{CE} (16-17)

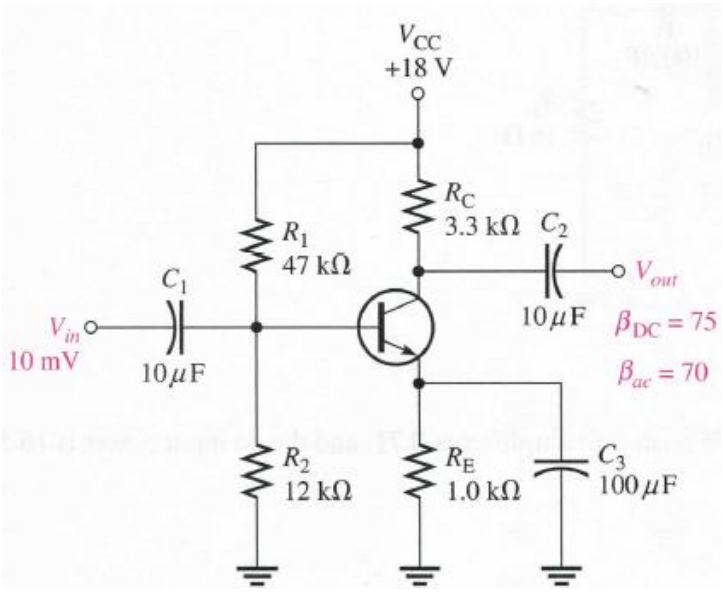

Figure 7

8. Determine the maximum peak output voltage and peak load current for circuit in Figure 8. (16-25)

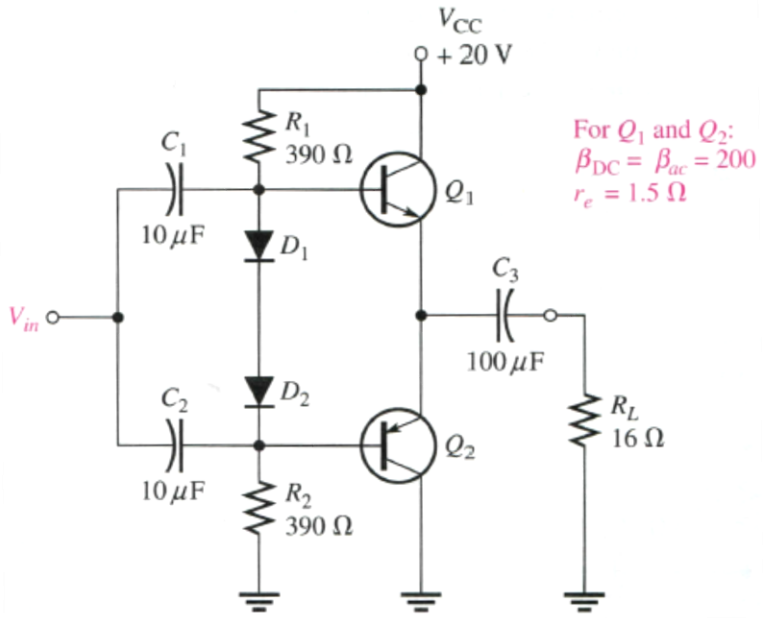

Figure 8

9. Determine $I_{C(sat)}$ for the transistor in Figure 9. What is the value of I_B necessary to produce saturation? What minimum value of V_{IN} is necessary for saturation? (16-27)

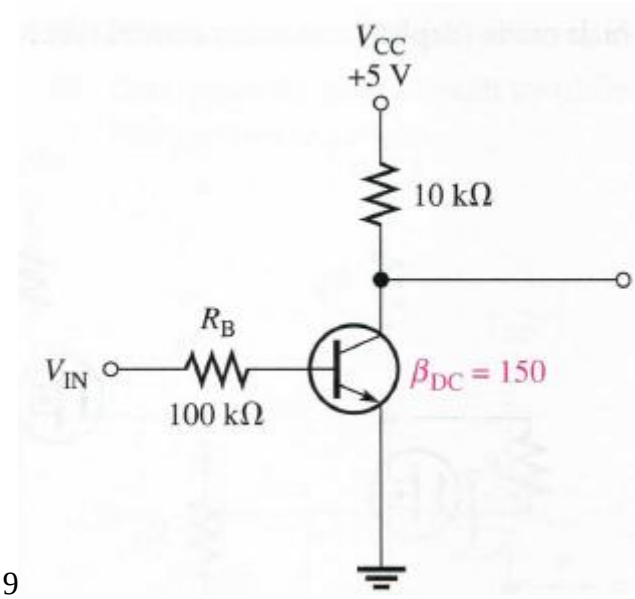

Figure 9

10. Identify the type of input mode for each op-amp in Figure 10. (17-7)

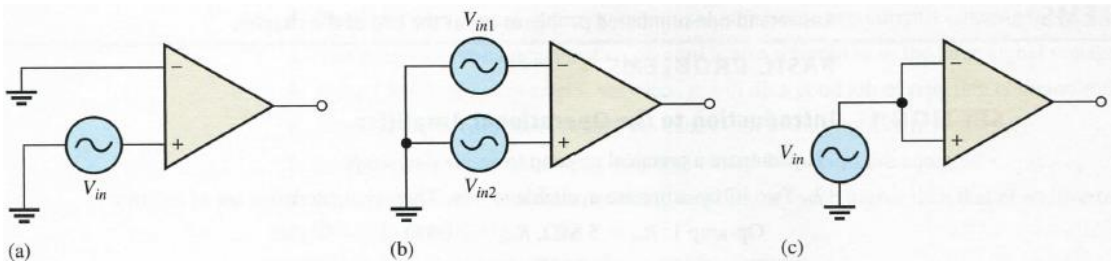

Figure 10

11. Identify each of the op-amp configurations in Figure 11. (17-16)

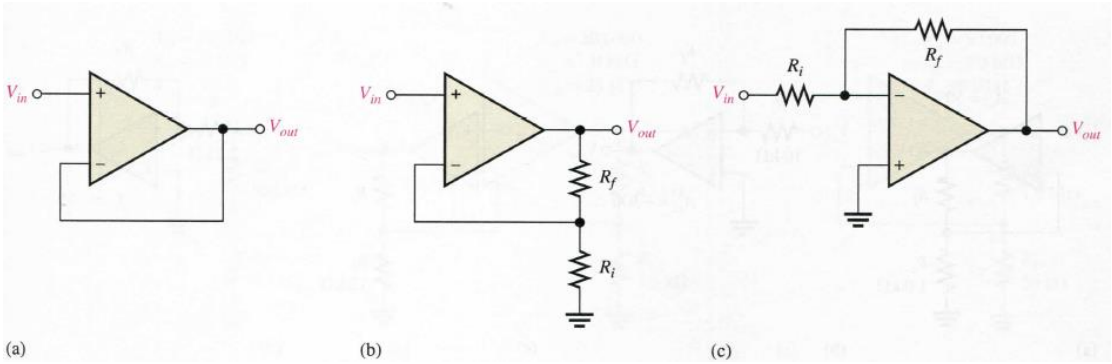

Figure 11

12. Find the gain of each amplifier in Figure 12. (17-20)

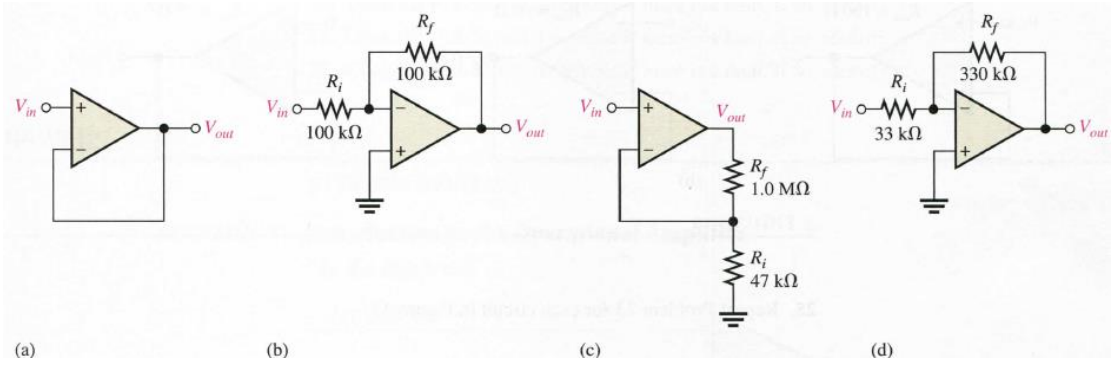

Figure 12

13. Determine the output level (maximum positive or maximum negative) for each comparator in Figure 13. (18-1)

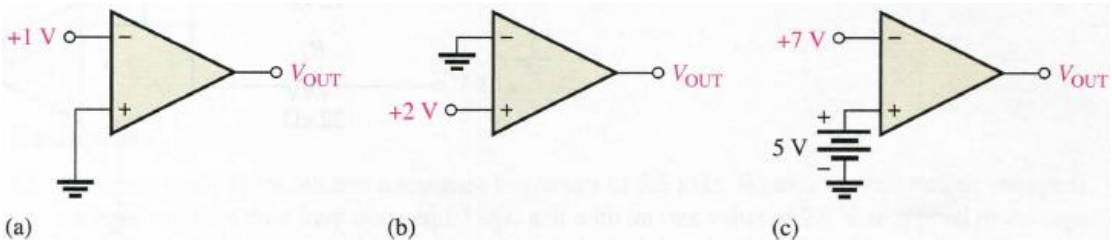

Figure 13

14. Draw the output voltage waveform for each circuit in Figure 14 with respect to the input. Show voltage levels. (18-3)

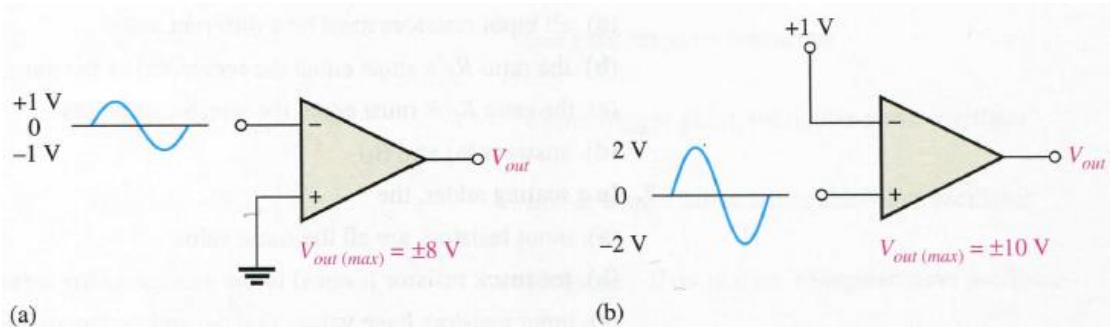

Figure 14

15. Determine the output voltage for each circuit in Figure 15. (18-4)

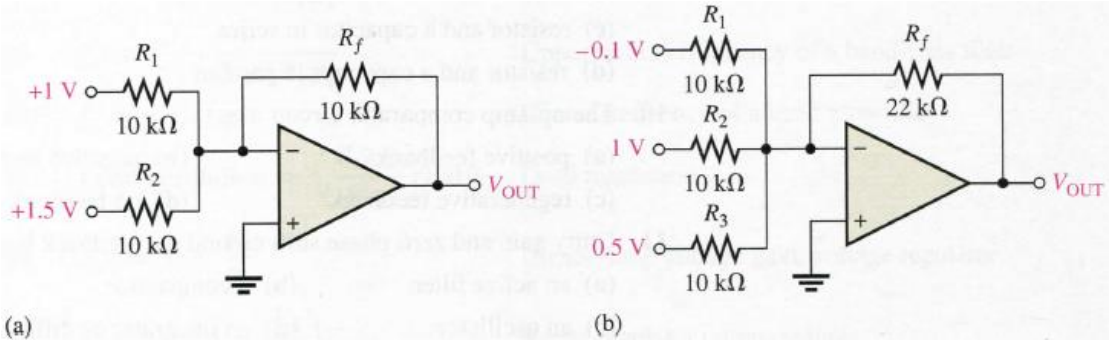

Figure 15

16. Determine the rate of change of the output voltage in response to the step input to the ideal integrator in Figure 16. (18-9)

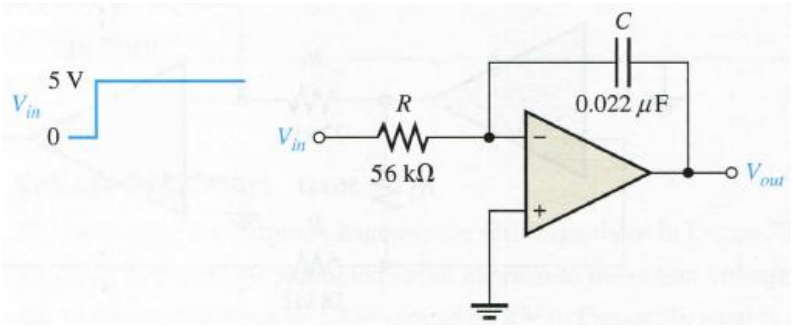

Figure 16

17. A triangular waveform is applied to the input of the ideal differentiator in Figure 17 as shown. Determine what the output should be, and draw its waveform in relation to the input. (18-10)

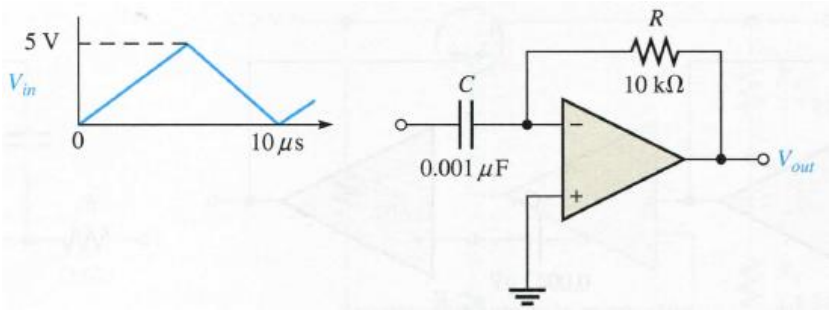

Figure 17