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Tutorial 2
DKT214 – Electronic Circuits; Semester 1 2017/ 2018

1. Draw the output voltage waveform for each circuit in Figure 2.1 with respect to the input. Show voltage levels.

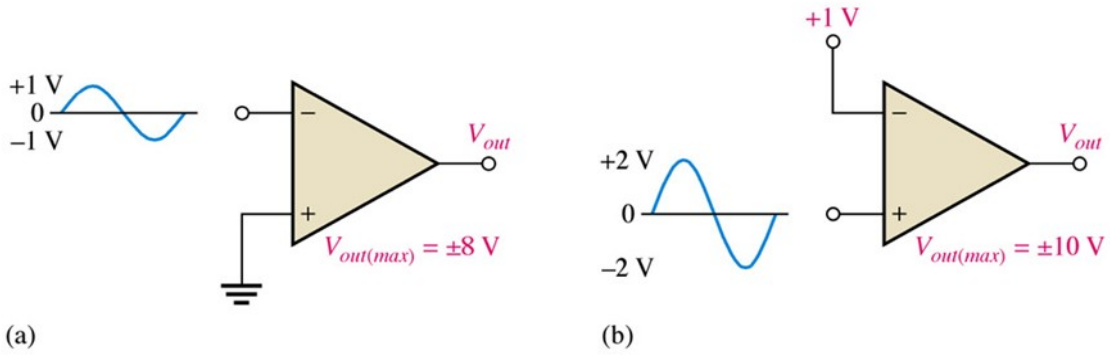

Figure 2.1

2. Calculate the V_{UTP} and V_{LTP} in Figure 2.2. $V_{out(max)} = \pm 10$ V. Determine also the hysteresis voltage.

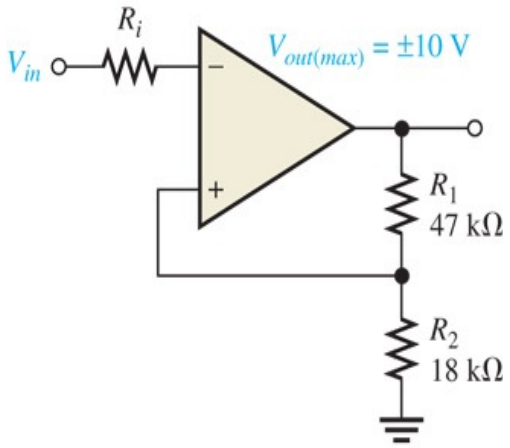

Figure 2.2

3. Determine the output voltage waveform in Figure 2.3

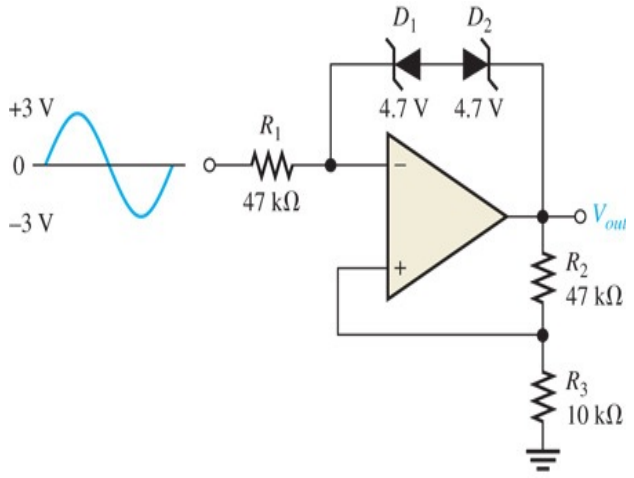

Figure 2.3

4. Determine the output voltage for each circuit in Figure 2.4.

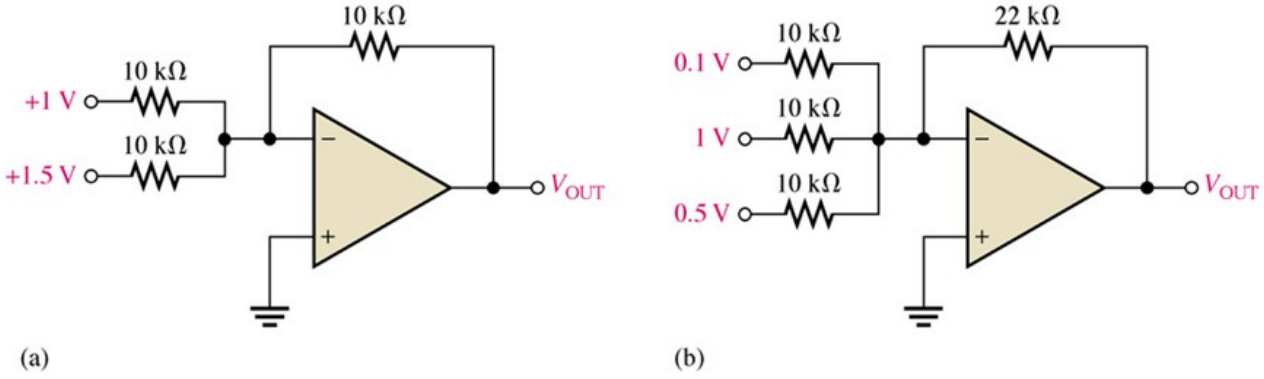

Figure 2.4

5. Refer to Figure 2.5. Determine the following:
(a) V_{R1} and V_{R2} (b) Current through R_f (c) V_{OUT}
Then, find the value of R_f necessary to produce an output that is five times the sum of the inputs in that figure.

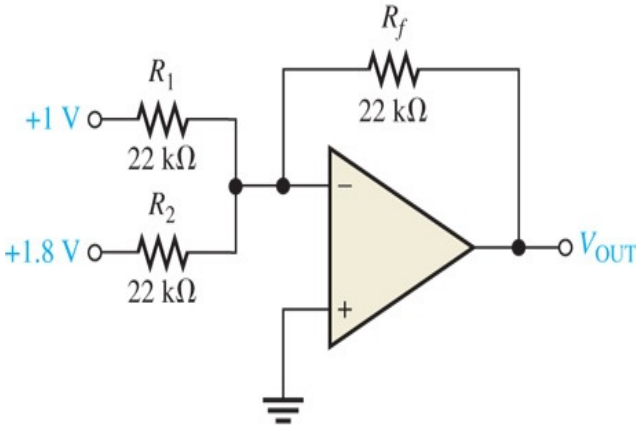

Figure 2.5

6. Find the output voltage when the input voltages shown in Figure 2.6 are applied to the scaling adder. What is the current through R_f?

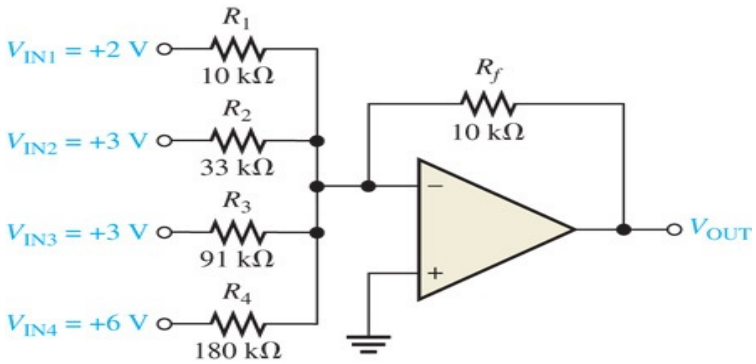

Figure 2.6

7. Determine the rate of change of the output voltage in response to the step input to the integrator in Figure 2.7.

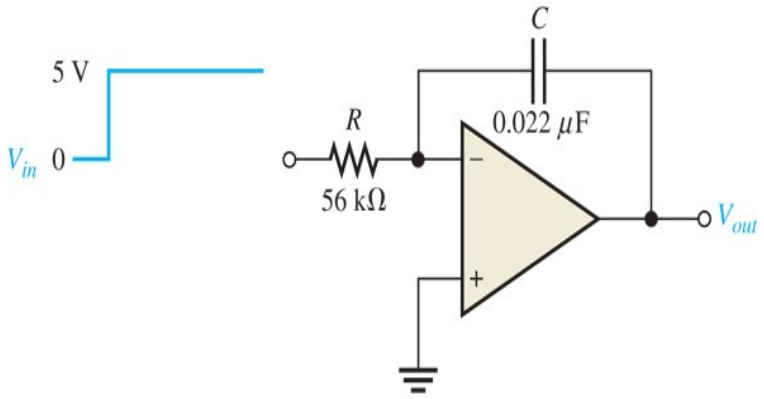

Figure 2.7

8. A triangular waveform with a peak-to-peak voltage of 2 V and a period of 1 ms is applied to the differentiator in Figure 2.8 (a). Determine the output and sketch the output waveform in relation to the input.

9. Beginning in position 1 in Figure 2.8 (b), the switch is thrown into position 2 and held there for 10 ms, then back to position 1 for 10 ms, and so forth. Sketch the resulting output waveform if its initial value is 0 V. The saturated output levels of the op-amp are ±12 V.

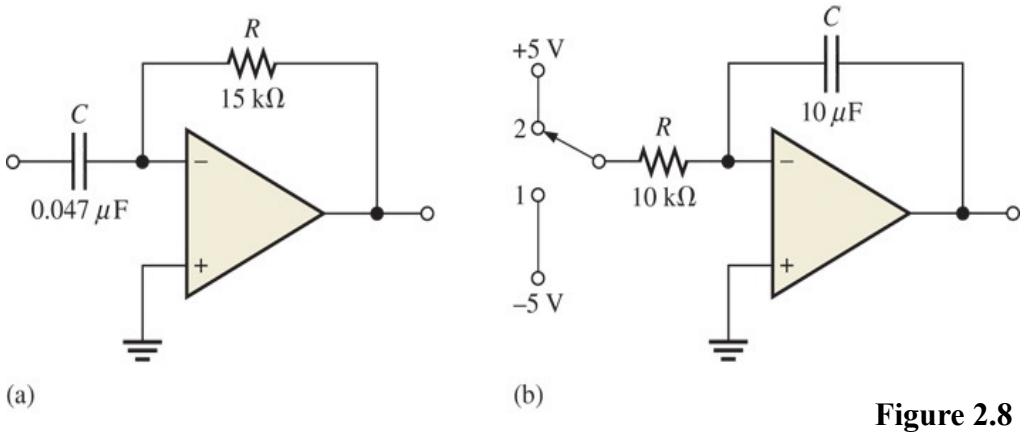

Figure 2.8