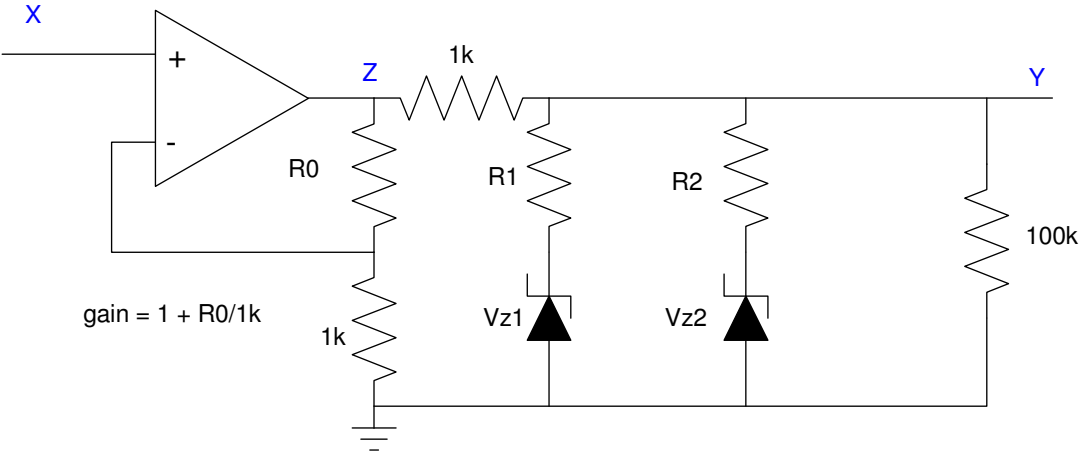
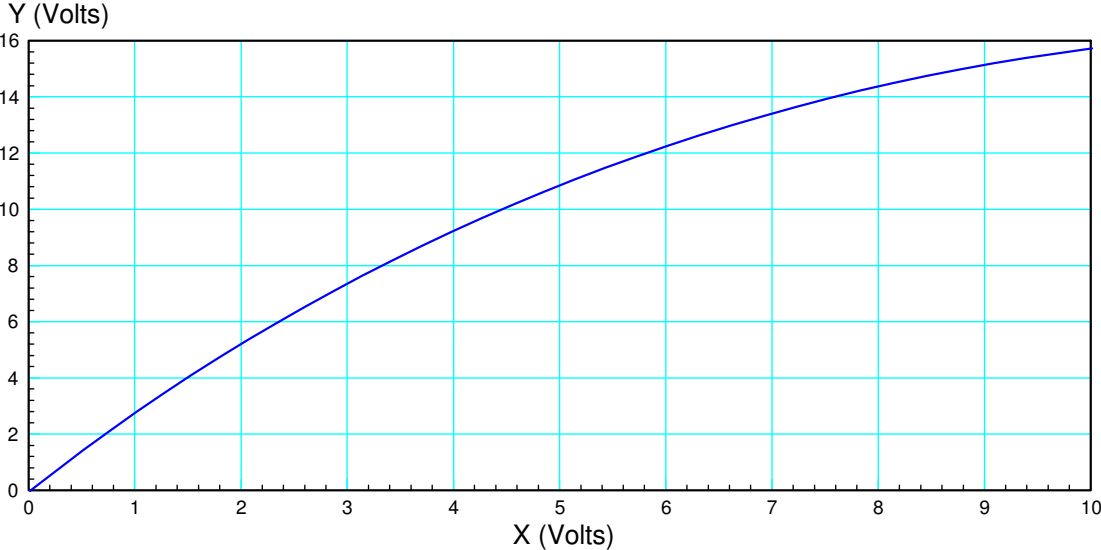


ECE 320: Handout #10

Clipper Circuits

Design a circuit to implement the following function



gain = $1 + R0/1k$

Solution

First, draw in a straight-line approximation for the function with two corners (two zener diodes)

- The voltage at the corner is the zener voltage
- The slope determines R_0 , R_1 , R_2

R0: Initial slope = 3.0

$$1 + \frac{R_0}{1k} = 3 \quad \Rightarrow R_0 = 2k$$

R1: Slope = 1.71

$$\left(\frac{R_1}{R_1 + 1k} \right) \cdot 3 = 1.71 \quad \Rightarrow R_1 = 1325\Omega$$

R2: Slope = 0.89. Let $R_{12} = R_1 \parallel R_2$

$$\left(\frac{R_{12}}{R_{12} + 1k} \right) \cdot 3 = 0.89 \quad \Rightarrow R_{12} = 422\Omega = R_1 \parallel R_2$$

