King Fahd University of Petroleum & Minerals
Electrical Engineering Department
EE201- 07 Electric Circuits
Quiz # 4

Name:	I.D#
Serial Number:	

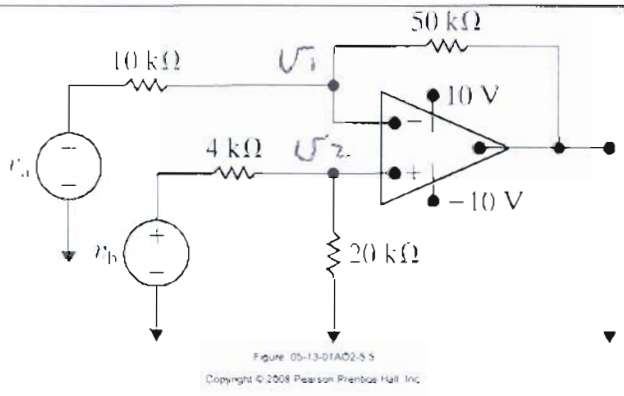

Figure 05-13-01AO2-S 5

In the difference amplifier shown, v_b=4.0 V.
What range of values for v_a will result in linear operation?

$$v_2 = \left(\frac{20}{4+20}\right)4 = \frac{10}{3}\ V$$

$$v_1 = v_2 = \frac{10}{3}\ V$$

Nodal Voltage Eq.

$$\frac{v_1 - v_a}{10} + \frac{v_1 - v_o}{50} = 0$$

$$v_a = \frac{20 - v_o}{5}$$

$$v_{a1} = \frac{20+10}{5} = 6\ V$$

$$v_{a2} = \frac{20-10}{5} = 2\ V$$

$$\boxed{2 \le v_a \le 6}$$