Homework 2.10

(a) When the setting potentiometer \( V_{r1} \) is adjusted the op amp is unbalanced and will give a positive or negative output which will drive the motor M, rotating the aeriel. A mechanical link to \( V_{r2} \) will cause the inverting input to be adjusted such that the output will switch off and the system will again be stable in the new position.

(b) 

Homework 2.11

(a) Comparator

(b) As the inverting input is increased from zero to the midpoint of the pot the voltage will increase until it reaches 1.5V. The output which was originally +9V will switch to zero. Further increase of the voltage at the inverting input will cause the output to switch immediately to –9V.