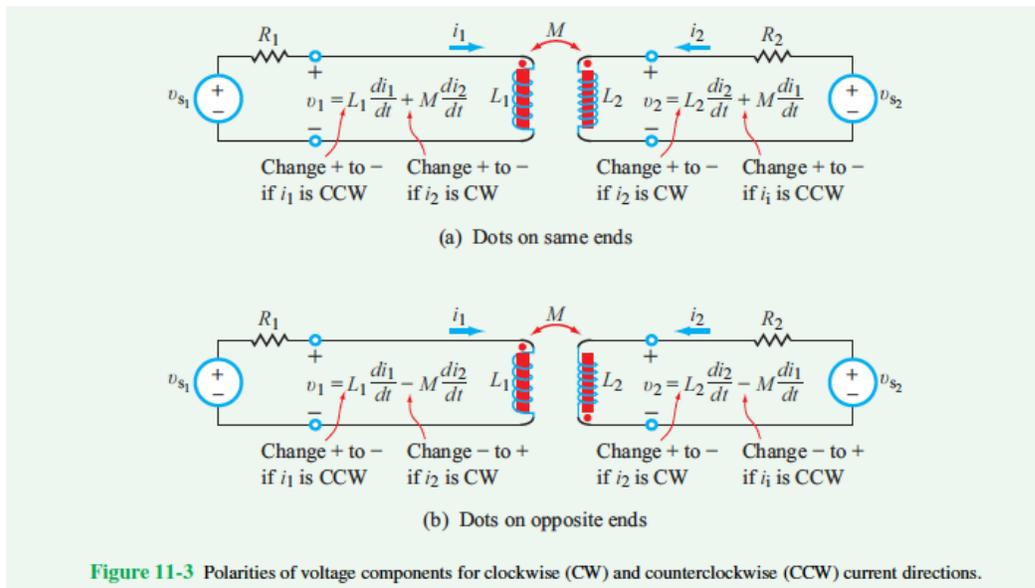


Concept Question 11-1: What determines the polarity of the mutual inductance voltage? Summarize the rules of the dot convention.



For dots on same ends and currents entering coils at dotted ends (Fig. 11-3(a)):

$$v_1 = L_1 \frac{di_1}{dt} + M \frac{di_2}{dt} \quad (11.8a)$$

and

$$v_2 = L_2 \frac{di_2}{dt} + M \frac{di_1}{dt} \quad (11.8b)$$

For dots on opposite ends but current entering coils at same ends (Fig. 11-3(b)):

$$v_1 = L_1 \frac{di_1}{dt} - M \frac{di_2}{dt} \quad (11.9a)$$

and

$$v_2 = L_2 \frac{di_2}{dt} - M \frac{di_1}{dt} \quad (11.9b)$$