

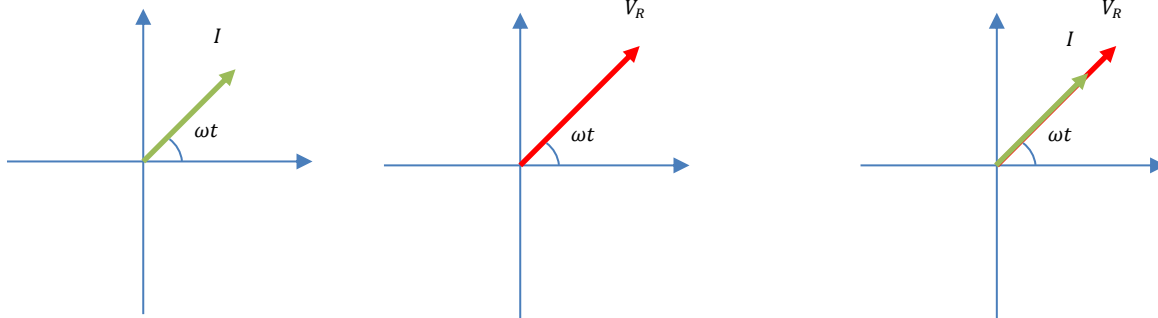
CONCEPT: PHASORS FOR RESISTORS

- Remember! The voltage and current across a resistor at any time t is

$$- i(t) = i_{MAX} \cos(\omega t)$$

$$- v_R(t) = i_{MAX} R \cos(\omega t)$$

- Because both cosines have the same angle (ωt), they are said to be IN PHASE.
 - This is reflected in their phasors:



- Voltage across a resistor is IN PHASE with the current

EXAMPLE: An AC source with an angular frequency of 20 s^{-1} is connected to a resistor with the circuit broken. 0.2 s after the circuit is completed, draw the voltage phasor and the current phasor.

PRACITCE: RESISTOR VOLTAGE AND CURRENT PHASORS

A $12\ \Omega$ resistor is connected to an AC source. If the resistor's voltage phasor is initially at 0° , and the figure below shows the phasor after 0.04 s , answer the following:

- What is the angular frequency of the source? Assume the phasor is on its first rotation.
- What does the current phasor diagram look like?
- What is the current in the circuit at this point ($t = 0.04\text{ s}$)?

