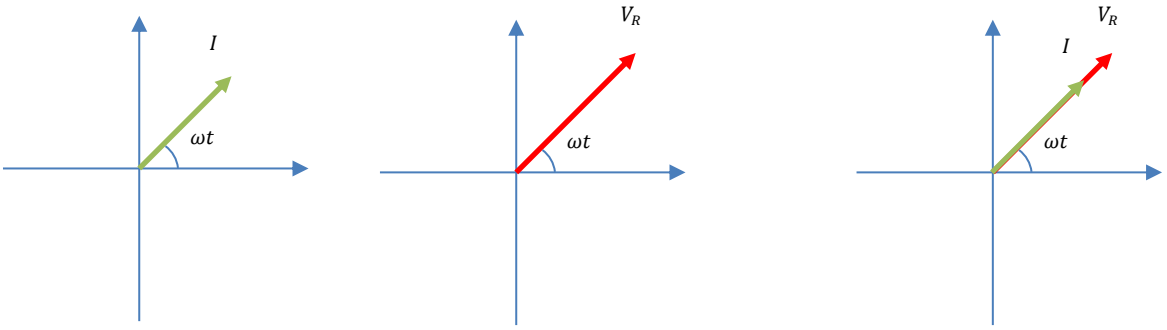
CONCEPT: PHASORS FOR RESISTORS

- 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 Ω 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:

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