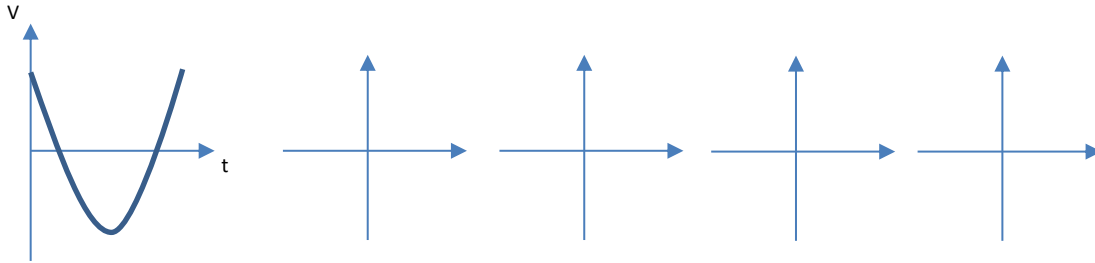
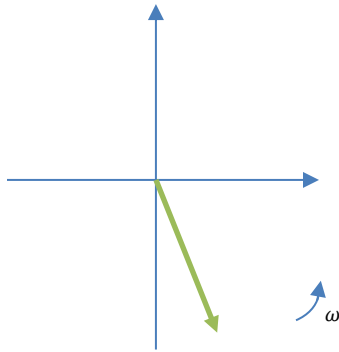


CONCEPT: PHASORS

- A PHASOR is just a rotating vector, whose information lies in its X-COMPONENT.
 - Phasors make representing oscillating information, like voltage and current, easy:

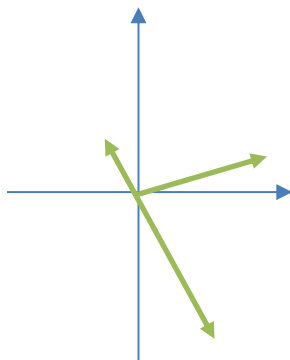


EXAMPLE 1: For the following voltage phasor, is the voltage positive or negative?



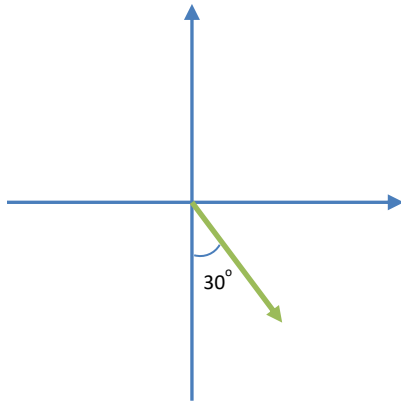
- Phasors obey all the same rules as vectors, such as addition, subtraction, etc.
 - To find the magnitude of a phasor, you can sum its components using the Pythagorean theorem, as with vectors.

EXAMPLE 2: In the following phasor diagram, find the direction of the “net phasor” for the three phasors shown. Is the resulting quantity the phasor describes positive or negative?



PRACTICE: ANGULAR FREQUENCY OF A PHASOR

The following phasor diagram shows an arbitrary phasor during its first rotation. Assuming that it begins with an angle of 0° , if the phasor took 0.027 s to get to its current position, what is the angular frequency of the phasor?

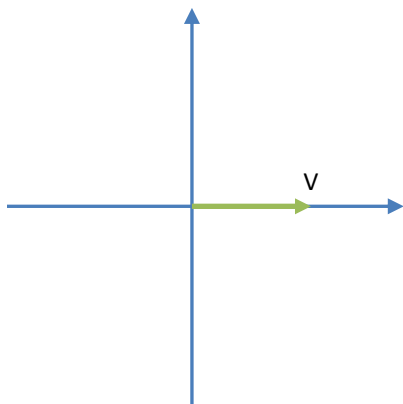


EXAMPLE: CONVERTING BETWEEN A FUNCTION AND A PHASOR

The current in an AC circuit is given by $i(t) = (1.5\text{ A}) \cos[(377\text{ s}^{-1})t]$. Draw the phasor that corresponds to this current at $t = 15\text{ ms}$, assuming the phasor begins at 0° .

PRACTICE: DRAWING A VOLTAGE PHASOR

An AC source oscillates with an angular frequency of 120 s^{-1} . If the initial voltage phasor is shown in the following phasor diagram, draw the voltage phasor after 0.01 s .



PRACTICE: INSTANTANEOUS VALUE FROM A PHASOR

A phasor of length 4 begins at 0° . If it is rotating at $\omega = 250 \text{ s}^{-1}$, what is the value of the phasor after 0.007 s ?