

RECITATION 01

Exercise 01

Find the component form of vector U , given its magnitude and the angle the vector makes with the positive x-axis. Give exact answers when possible.

$$\left\| \vec{U} \right\| = 2, \quad \theta = 30^\circ$$

$$\left\| \vec{U} \right\| = 6, \quad \theta = 60^\circ$$

$$\left\| \vec{U} \right\| = 5, \quad \theta = 90^\circ$$

Exercise 02

Given vectors with

$$A = \langle 6, 5 \rangle, \quad B = \langle 0, 4 \rangle$$

1. Find the magnitude and direction angle for the vector.
2. Use the given vectors to compute $A+B$, $A-B$, $2A-3B$, $A \cdot B$ and $\cos \Theta$

Exercise 03

Using the operator, $a = 1 \angle 120^\circ$, calculate the following expression:

1. $(a - 1)/(1 + a - a^2)$
2. $(1 + a)(1 + a^2)$

Exercise 04

Proved U^{-1} is inverse of U for:

$$U = \begin{bmatrix} 1 & 1 & 1 \\ 1 & a^2 & a \\ 1 & a & a^2 \end{bmatrix}, \quad U^{-1} = \frac{1}{3} \begin{bmatrix} 1 & 1 & 1 \\ 1 & a & a^2 \\ 1 & a^2 & a \end{bmatrix}$$