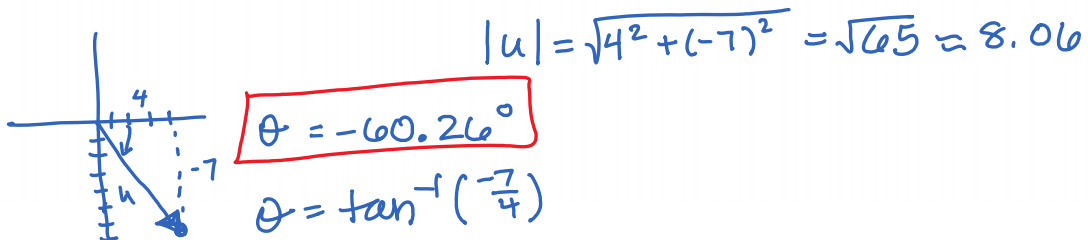


Section 6.1 – More Vectors

Quick review: Find the magnitude and direction angle of vector $u = \langle 4, -7 \rangle$.

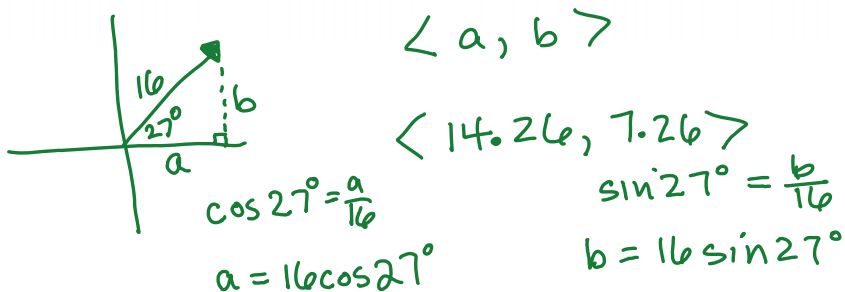


OR $\theta = 360 - 60.26$

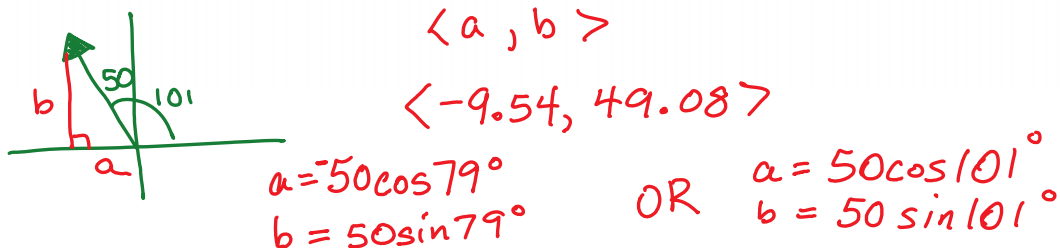
$\theta = 299.74^\circ$

What if you are given the magnitude and the direction angle of a vector and you have to find the component form of the vector?

Ex: Find the component form of a vector with magnitude of 16 and direction angle of 27 degrees.



Ex: Find the component form of a vector with magnitude of 50 and direction angle of 101 degrees.



Component Form

$\langle r \cos \theta, r \sin \theta \rangle$

Component Form

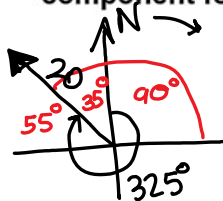
$$\langle a, b \rangle = \langle |v| \cos \theta, |v| \sin \theta \rangle$$



Try one: Find the component form of a vector with magnitude of 32 degrees and direction angle of 138 degrees.

Word Problems with Vectors

Ex: A ship is sailing on a bearing of 325 degrees at 20 mph. Find the component form of the velocity of the ship.

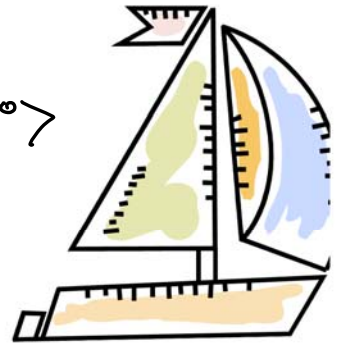


$$\theta = 125^\circ$$

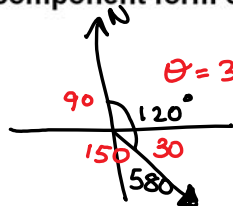
$$\langle 20 \cos 125^\circ, 20 \sin 125^\circ \rangle$$

$$\langle -11.47, 16.38 \rangle$$

11.47 West, 16.38 North



Ex: An airplane is flying on a bearing of 120 degrees at 580 mph. Find the component form of the velocity of the plane.



$$\theta = 330^\circ \quad \text{Garrett's Formula} \cdot 450^\circ - \text{Bearing}$$

$$= 450 - 120$$

$$= 330^\circ \checkmark$$

Ex: A baseball is thrown at a 46 degree angle with the horizontal with an initial speed of 20 meters per second. Find the component form of the initial velocity of the ball.



initial speed of 20 meters per second. Find the component form of the initial velocity of the ball.

