

Example #3b p. 2 Ch. 9

Write v in terms of $\langle a, b \rangle$ if

$$|v| = 4 \text{ and } \theta = 270^\circ$$

Notice this is a Quadrant \angle

- On the y-axis in the negative direction where
sine is negative $\sin 270^\circ = -1$
&
cosine is zero $\cos 270^\circ = 0$



Find the **horizontal** component

$$|v| = 4 \text{ and } \theta = 270^\circ$$

- The horizontal component is the x component which is given by $a = |v| \cos \theta$

$$a = 4 \cdot 0 = 0$$

Find the **vertical** component

$$|v| = 4 \text{ and } \theta = 270^\circ$$

- The vertical component is the y component which is given by $b = |v| \sin \theta$

$$b = 4 \cdot -1 = -4$$

Thus, v is

$$v = \langle 0, -4 \rangle$$

Notice: The vector would have been $\langle 0, -1 \rangle$ if the magnitude were 1 and this is 4 times that vector!