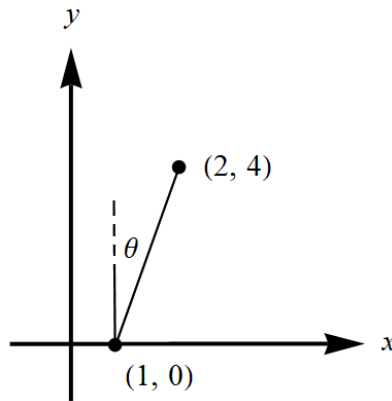


Exercise 29

A ship at position $(1, 0)$ on a nautical chart (with north in the positive y direction) sights a rock at position $(2, 4)$. What is the vector joining the ship to the rock? What angle θ does this vector make with due north? (This is called the *bearing* of the rock from the ship.)

Solution



The vector joining the ship to the rock is

$$(2, 4) - (1, 0) = (1, 4).$$

The angle is

$$\tan \theta = \frac{1}{4} \quad \rightarrow \quad \theta = \tan^{-1} \frac{1}{4} \approx 14.04^\circ.$$