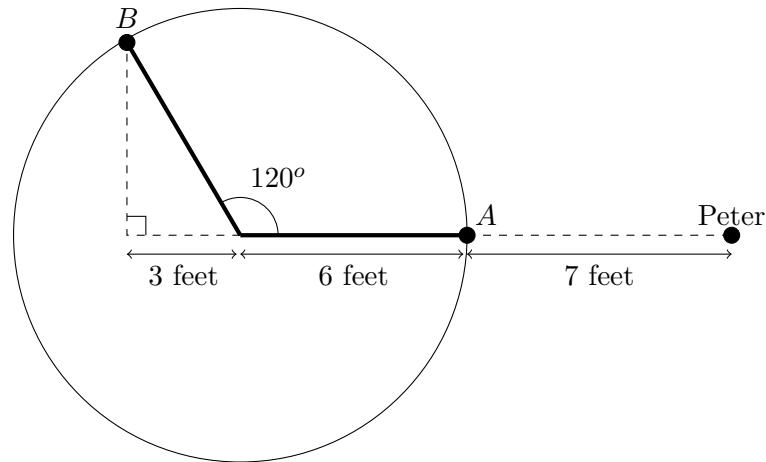


6. [15 points] At the park, Prem is riding on a merry-go-round of radius 6 feet spinning at a constant speed, and Peter is watching, 7 feet away from the merry-go-round. Prem starts at the point A and after 1.5 seconds he's at the point B . The situation is depicted below. The motion of the merry-go-round is counter-clockwise.



- a. [2 points] How long does it take for the merry-go-round to complete one revolution?

It takes the merry-go-round _____ seconds to complete one revolution.

- b. [2 points] How far did Prem travel along the circumference of the merry-go-round between point A and point B ? Give your answer in exact form.

Prem traveled _____ feet between point A and point B .

- c. [2 points] By how many **radians** does the merry-go-round rotate in 3 seconds? Give your answer in exact form.

The merry-go-round rotates _____ radians in 3 seconds.

- d. [3 points] Find the distance between Peter and the point B .

The distance between Peter and the point B is _____ feet.

- e. [6 points] Find a function $D(\theta)$ that gives the distance in feet between Prem and Peter after Prem has rotated θ degrees from the point A .

$$D(\theta) = \underline{\hspace{10em}}.$$