4.1.1 / 4.1.2

Notes

Basic Definitions

- Central angle:
- Degree:
- Minutes:
- Seconds:
- Course/bearing:
- Line of travel:
- Radian:

DMS Conversion

Degree (°) minute (‘) second (“)

1 minute = 1/60 of a degree; 1 second = 1/(60*60) of a degree

Convert 48.125° to DMS

Convert 124°56’12” to degrees

Radian Conversions

To convert from radians (rad) to degrees (°), multiply the radian value by

To convert from degrees (°) to radians (rad), multiply the degree value by

- How many radians is 305°?

- How many degrees is $7\pi/3$?

Arc Length

- Since a central angle of 1 radian always intercepts an arc of one radius in length, it follows that a central angles of θ radians in a circle of radius r intercepts an arc of length θr.

- Arc length formula (radian measure):

Arc Length

- Arc length formula (degree measure):

Find the perimeter of a slice of apple pie, given the diameter of the pie is 9” and there are 8 slices of pie.

Work Through Example 4 (pg. 323)

Angular and linear motion

- Angular speed is measured in units like *revolutions per minute*
- Linear speed is measured in units like *mph, fps, etc.*
- Based on conversion factors (like radians to degrees or degrees to DMS)

Problem

- Tonie's truck has 42" Mickey Thompson tires. If the wheels are rotating at 630 rpm, what is her truck's mph?

Problem 2

- Cary races BMX. His wheels have a 13” radius. When he is traveling at a speed of 37 ft/sec, how many revolutions per minute are the wheels making?