

Handout Math 48C Mitchell Schoenbrun

M48C/Schoenbrun Section 6.1

Part 1

Convert each degree measure into radians and each radian measure into degrees

1) 325°

2) 60°

3) $23\pi/12$

4) $10\pi/3$

5) -315°

6) $-\pi/2$

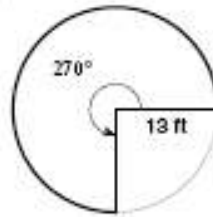
M48C/Schoenbrun Part 1

Find the length of each arc. Round your answers to the nearest tenth.

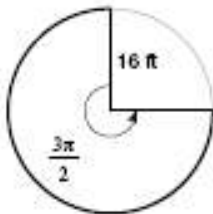
1)



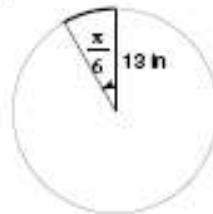
2)



3)



4)



5) $r = 18 \text{ cm}, \theta = 60^\circ$

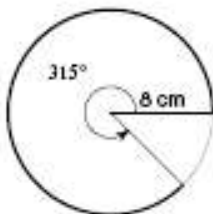
6) $r = 16 \text{ m}, \theta = 75^\circ$

7) $r = 9 \text{ ft}, \theta = \frac{7\pi}{4}$

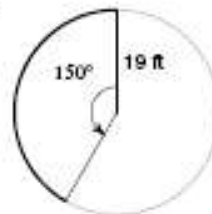
8) $r = 14 \text{ ft}, \theta = \frac{19\pi}{12}$

Find the length of each arc. Do not round.

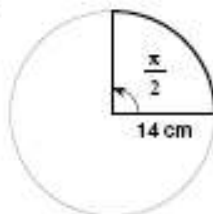
9)



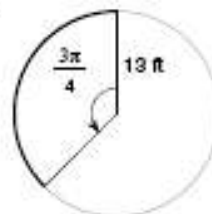
10)



11)



12)



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Part 2

1. A physical therapist is measuring the range of motion of an athlete's knee after knee construction (torn ACL). The athlete can bend it 132° , but the physical therapist wants him to acquire a full range of motion, 180° .

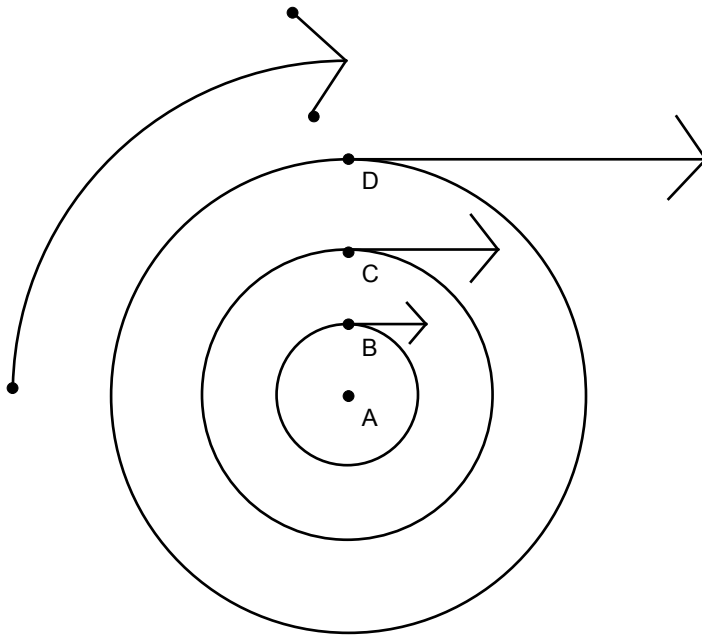
(a) How many degrees of motion does the athlete have to recover?

(b) If the athlete recovers at 4° per week, how long will rehabilitation take?

2. Two wheels are rotating in such a way that the rotation of the smaller wheel causes the larger wheel to rotate. The radius of the smaller wheel is 6.9 cm and the radius of the larger wheel is 10.9 cm. Through how many degrees will the larger wheel rotate if the smaller one rotates 108° ?

3. The diameter of a pizza is 12 inches and the pizza has been cut into 8 slices. Assuming that the pizza has been cut evenly, what is the length of the crust for each slice of pizza?

Part 3



Assume this is turning at 1 rpm, with $AB = 1$, $AC = 2$, and $AD = 3$

What is the angular velocity in radians per minute? $2\pi/\text{min}$.

What is the linear speed at point A? _____

What is the linear speed at point B? _____

What is the linear speed at Point C? _____

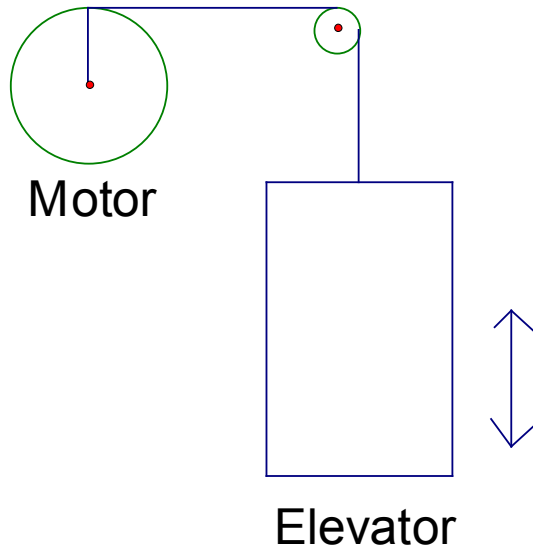
What is the linear speed at Point D? _____

So linear speed $V = r\omega$ where r is the radius and ω is the angular speed in radians/time.

Have students do Problems 1 and 2 from the Handout

Short Break

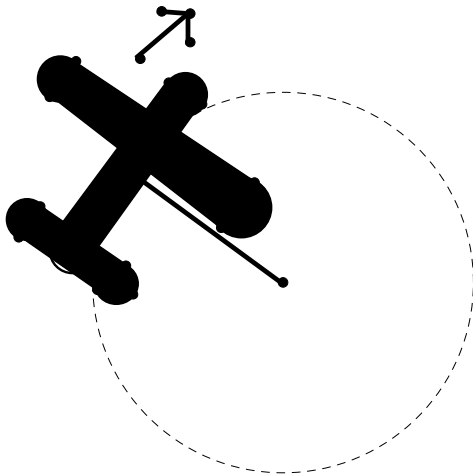
Part 4
Problem 1)



The motor cylinder is 1 meter in diameter.
The motor can move the elevator up at 8 RPM or down at 18 RPM

What are the up and down speeds of the elevator?

Problem 2)



A toy Airplane flies at 4meters/second. It is held by a string that is 5 meters in length.
What is its angular velocity in radians/sec and RPM?