

Name: _____

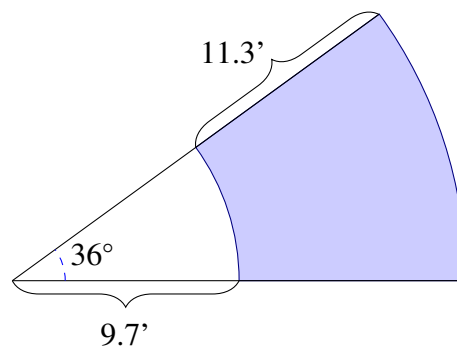
Exam III

[10 pts] **Problem 1.** Convert -735° to radians. Your answer should be exact.

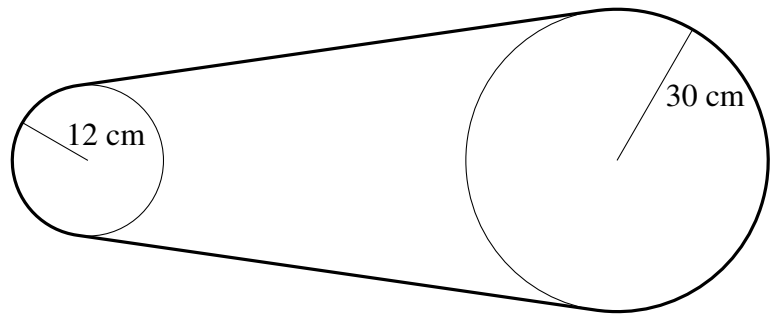
[10 pts] **Problem 2.** Convert $\frac{17\pi}{20}$ to degrees.

[15 pts] **Problem 3.** Find the exact value of s in the interval $\left[\pi, \frac{3\pi}{2}\right)$ where $\sec s = -\sqrt{2}$.

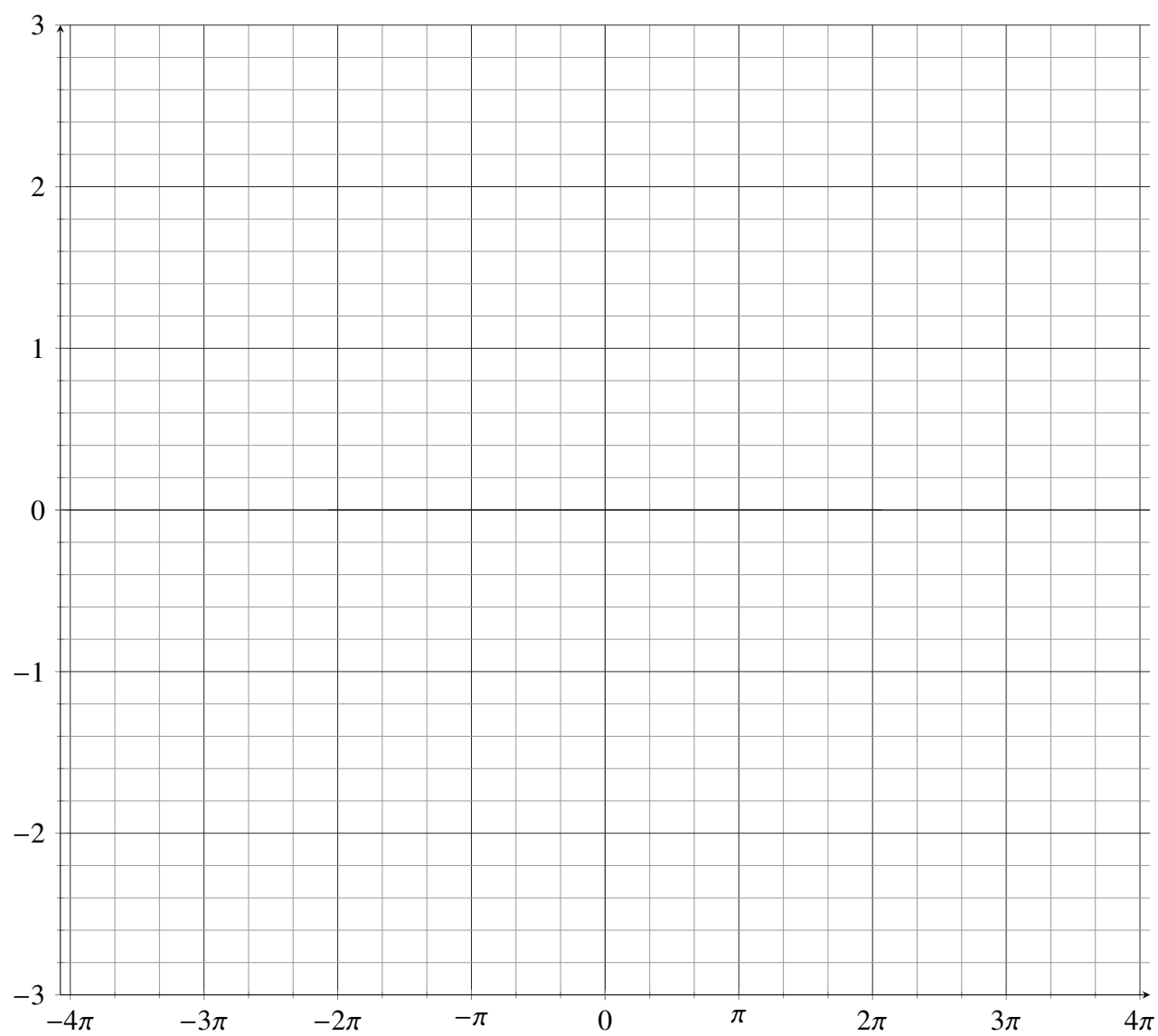
[15 pts] **Problem 4.** Find the **area** and **perimeter** of the annulus sector shown in the figure below.



[20 pts] **Problem 5.** In a transmission system two gears are connected as shown in the figure below so that both gears will rotate with the same linear speed. Suppose that the gear on the right rotates at 3200 RPM. Calculate how many RPMs the left gear will rotate.



[15 pts] **Problem 6.** Sketch the graph of the function for $y = 1 - 2 \sin\left(\frac{2x}{3} + \frac{\pi}{3}\right)$ over *two* periods.



[15 pts] **Problem 7.** Suppose that a mass is attached to the end of a spring and pulled down 3 cm from its point of rest. The mass begins oscillating and a camera measures the frequency of the oscillation at 47 Hz.

(a) Calculate the amplitude and period of the oscillation.

(b) Write out an equation that models the oscillating motion.

(c) At what position, relative to the resting point of the spring, will the mass be after one minutes has elapsed?