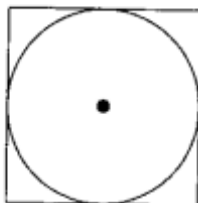


**Related Rates – FRQ Exit Slip**

Name \_\_\_\_\_ PER \_\_\_\_\_ DATE \_\_\_\_\_

Annotate the problem and the diagram. Then, show your work and box your answers. Yes, Luis. This problem and the others that you completed in today's notes and practice sessions count towards your FRQ folder due to me at the end of the semester. We are going to finalize those details on Wednesday!!



A circle is inscribed in a square as shown in the figure above. The circumference of the circle is increasing at a constant rate of 6 inches per second. As the circle expands, the square expands to maintain the condition of tangency. (Note: A circle with radius  $r$  has circumference  $C = 2\pi r$  and area  $A = \pi r^2$ )

- (a) Find the rate at which the perimeter of the square is increasing. Indicate units of measure.
- (b) At the instant when the area of the circle is  $25\pi$  square inches, find the rate of increase in the area enclosed between the circle and the square. Indicate units of measure.