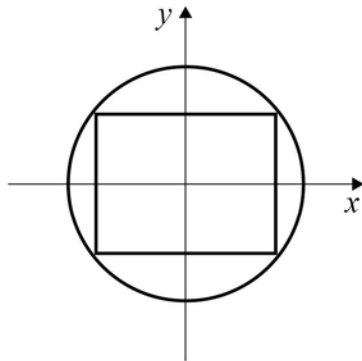


13

A company is designing a logo. The logo is a circle of radius 4 inches with an inscribed rectangle. The rectangle must be as large as possible.

The company models the logo on an  $x$ - $y$  plane as shown in the diagram.



Use calculus to find the maximum area of the rectangle.

Fully justify your answer.

**[10 marks]**