



The diagram shows a circle with centre O and radius r . The angle of the **minor** sector AOB of the circle is x radians. The area of the **major** sector of the circle is 3 times the area of the shaded region.

- (a) Show that $x = \frac{3}{4} \sin x + \frac{1}{2}\pi$. [4]
- (b) Show by calculation that the root of the equation in (a) lies between 2 and 2.5. [2]
- (c) Use an iterative formula based on the equation in (a) to calculate this root correct to 2 decimal places. Give the result of each iteration to 4 decimal places. [3]