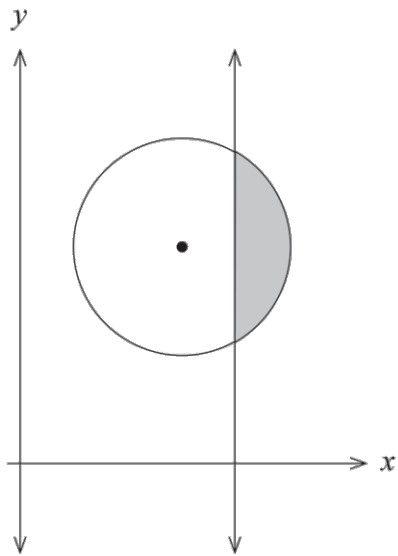


Question 7**(9 marks)**

The shaded region is bounded by the curve $(x - 3)^2 + (y - 4)^2 = 4$ and the line $x = 4$.



- (a) Show that the area of this region is given by the definite integral $\int_4^a 2\sqrt{4 - (x - 3)^2} dx$.
State the value for a . (3 marks)

- (b) By using the substitution $x - 3 = 2\sin \theta$, determine the exact value for the area of the shaded region. (6 marks)