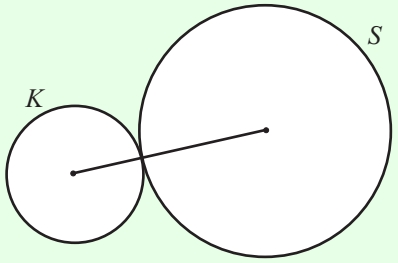
CIRCLE (Q 1, PAPER 2)

2005

1 (a) Circles S and K touch externally. Circle S has entre (8, 5) and radius 6. Circle K has centre $(2, -3)$. Calculate the radius of K.



1 (b) (i) Prove that the equation of the tangent to the circle $x^2 + y^2 = r^2$ at the point (x_1, y_1) is $xx_1 + yy_1 = r^2$.

(ii) Hence, or otherwise, find the two values of b such that the line $5x + by = 169$ is a tangent to the circle $x^2 + y^2 = 169$.

1 (c) A circle passes through the points (7, 2) and (7, 10). The line $x = -1$ is a tangent to the circle. Find the equation of the circle.

ANSWERS

1 (a) $r = 4$

1 (b) (i) $b = \pm 12$

1 (c) $x^2 + y^2 - 8x - 12y + 27 = 0$