DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

**3** Point $A$ has coordinates $(3, -1)$.

A circle has equation $(x-4)^2+(y+3)^2=5$.

**(a)** Show that $A$ lies on the circumference of the circle. [1]

**(b)** Given that $AB$ is a diameter of the circle, find the coordinates of $B$. [2]

**(c)** Find the equation of the tangent to the circle at $A$. [3]

**4** **(a)** Solve the equation $x^{\frac{1}{3}} - x^{\frac{1}{6}} = 2$. [4]

**(b)** Solve the simultaneous equations

$$\lg(x+2y) = 0$$
$$x^2 + 4xy + y = 1.$$

[5]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN