**3.**

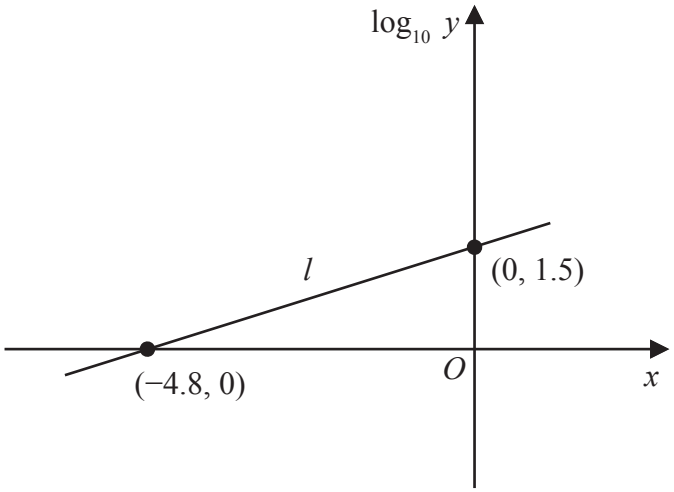



**Figure 1**

The line $l$ in Figure 1 shows a linear relationship between $\log_{10} y$ and $x$.

The line passes through the points (0, 1.5) and (−4.8, 0) as shown.

(a) Write down an equation for $l$.

**(2)**

(b) Hence, or otherwise, express $y$ in the form $kb^x$, giving the values of the constants $k$ and $b$ to 3 significant figures.

**(3)**

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**Question 3 continued**

**(Total for Question 3 is 5 marks)**

**4.** $$f(x) = \frac{2x^4 + 15x^3 + 35x^2 + 21x - 4}{(x+3)^2} \qquad x \in \mathbb{R} \quad x > -3$$

(a) Find the values of the constants $A$, $B$, $C$ and $D$ such that

$$f(x) = Ax^2 + Bx + C + \frac{D}{(x+3)^2}$$

**(4)**

(b) Hence find,

$$\int f(x)\,dx$$

**(3)**

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