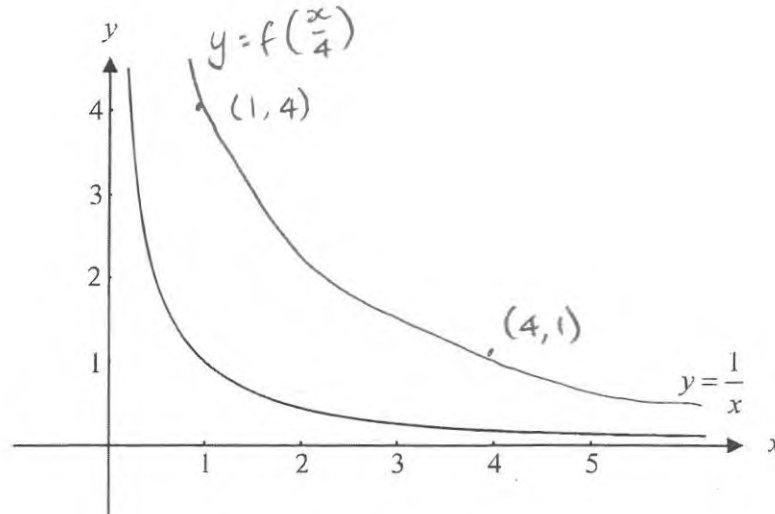


Question 7

Consider the function $f: (0, \infty) \rightarrow \mathbb{R}$, $f(x) = \frac{1}{x}$. The graph of $y = f(x)$ is shown on the graph below.



The graph of $y = f(x)$ is to be transformed to become the graph of $y = f\left(\frac{x}{4}\right)$.

- a. On the graph above, sketch this transformed function. Clearly mark the coordinates of any two points on your graph. $n = \frac{1}{4} \therefore \text{dilation } \leftrightarrow \times 4$
- b. Describe the transformation that has taken place.

dilation factor 4, from the x-axis

- c. Write down a rule for this transformed function.

$$y = f\left(\frac{x}{4}\right) \quad x = \frac{x'}{4}$$

$$\therefore y = \frac{1}{\left(\frac{x}{4}\right)} \quad \therefore y = \frac{1}{\left(\frac{x'}{4}\right)}$$

$$\therefore \boxed{y = \frac{4}{x}} \quad \therefore \boxed{y = \frac{4}{x}}$$

2+1+1=4 marks