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A LEVEL MATHS

(21) Reciprocal Graphs

WORKING AT D/E

(1) Draw the graph of $y = \frac{1}{x}$ including the equations of any asymptotes.

(2) Draw the graph of $y = \frac{1}{x^2}$ including the equations of any asymptotes.

(3) Draw the graph of $y = -\frac{1}{x}$ including the equations of any asymptotes.

WORKING AT B/C

(1) (a) On the same set of axes, sketch the graphs of $y = \frac{2}{x}$ and $x + y = 6$

(b) Hence, state the number of solutions to the simultaneous equations:
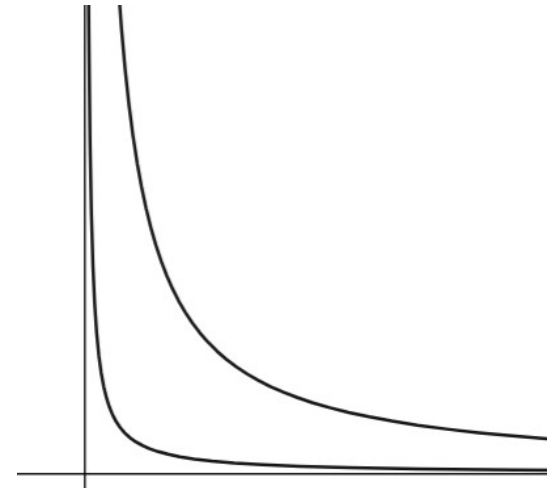
$$y = \frac{2}{x}$$

$$x + y = 6$$

(2) By draw two different graphs, show that there are 2 real solutions to the simultaneous equations

$$y = \frac{1}{x^2}$$

$$y = 6$$

(3) Write down the equations of the asymptotes of the curve $y = 8x^{-2}$

WORKING AT A*/A

(1) The diagram below shows part of the curves of $y = \frac{a}{x}$ and $y = \frac{b}{x}$ where a and b are positive constants and $b > a$.

Label each graph with its equation.

(2) The graph of $y = \frac{a}{x^2}$ passes the point $(-2, -16)$

(a) Find the value of a

(b) Sketch the graph of $y = \frac{a}{x^2}$ showing any asymptotes on the graph.