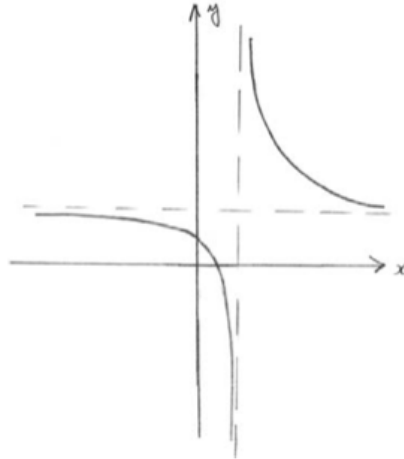


- 1) (i) (a)  $x = 1$  (AI) [1 mark]
- (b) (i)  $f(-1000) = 2.01$  (AI)
- (ii)  $y = 2$  (AI) [2 marks]

- 2) (a) (AI)(AI)



**Note:** Award (AI) for a second branch in approximately the correct position, and (AI) for the second branch having positive  $x$  and  $y$  intercepts. Asymptotes need not be drawn.

[2 marks]

- (b) (i)  $x$ -intercept  $= \frac{1}{2}$  (Accept  $(\frac{1}{2}, 0)$ ,  $x = \frac{1}{2}$ ) (AI)
- $y$ -intercept  $= 1$  (Accept  $(0, 1)$ ,  $y = 1$ ) (AI)
- (ii) horizontal asymptote  $y = 2$  (AI)
- vertical asymptote  $x = 1$  (AI)

[4 marks]

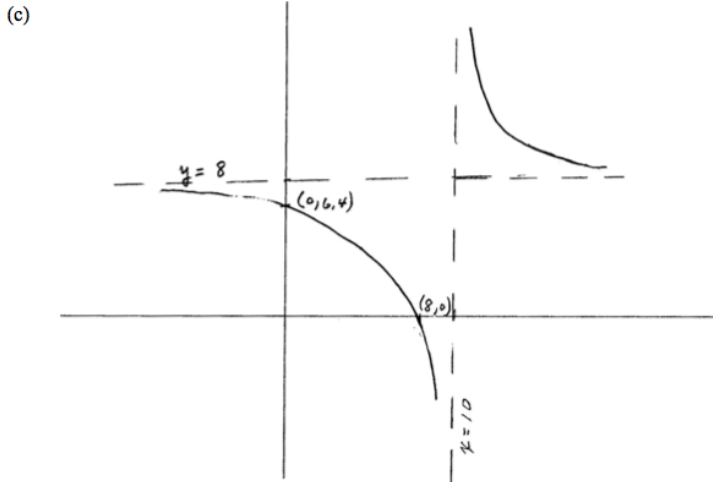
3)calc

- (a) (i)  $x=10$  (AI) (N1)  
 (ii)  $y=8$  (AI) (N1)

[2 marks]

- (b) (i) 6.4 (or (0, 6.4)) (AI) (N1)  
 (ii) 8 (or (8, 0)) (AI) (N1)

[2 marks]



(AI)(AI)(AI)(AI) (N4)

**Note:** Award (AI) for both asymptotes correctly drawn, (AI) for both intercepts correctly marked, (AI)(AI) for each branch drawn in approximately correct positions. Asymptotes and intercepts need not be labelled.

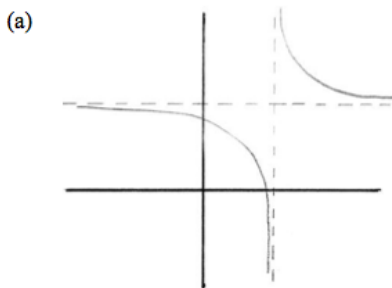
[4 marks]

- (d) There is a vertical translation of 8 units. (accept translation of  $\begin{pmatrix} 0 \\ 8 \end{pmatrix}$ ) (A2) (N2)

[2 marks]

Total [10 marks]

4)



AIAIAI N3

**Notes:** Award AI for both asymptotes shown. The asymptotes need not be labelled. Award AI for the left branch in approximately correct position, AI for the right branch in approximately correct position.

[3 marks]

- (b) (i)  $y=3, x=\frac{5}{2}$  (must be equations) AIAI N2

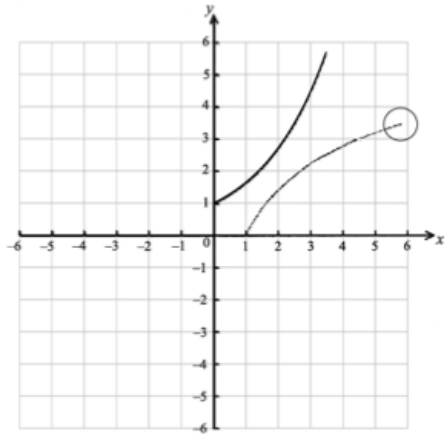
- (ii)  $x=\frac{14}{6}$   $\left(\frac{7}{3}$  or 2.33, also accept  $\left(\frac{14}{6}, 0\right)\right)$  AI N1

- (iii)  $y=\frac{14}{5}$  ( $y=2.8$ )  $\left(\text{accept } \left(0, \frac{14}{5}\right) \text{ or } (0, 2.8)\right)$  AI N1

[4 marks]

5)

(a)



**Note:** Award *A1* for approximately correct (reflected) shape,  
*A1* for right end point in circle, *A1* for through (1, 0).

*A1A1A1*      *N3*

(b)  $0 \leq y \leq 3.5$

*A1*      *N1*

(c) interchanging  $x$  and  $y$  (seen anywhere)

*M1*

e.g.  $x = e^{0.5y}$

evidence of changing to log form

*A1*

e.g.  $\ln x = 0.5y$ ,  $\ln x = \ln e^{0.5y}$  (any base),  $\ln x = 0.5y \ln e$  (any base)

$f^{-1}(x) = 2 \ln x$

*A1*      *N1*

[7 marks]