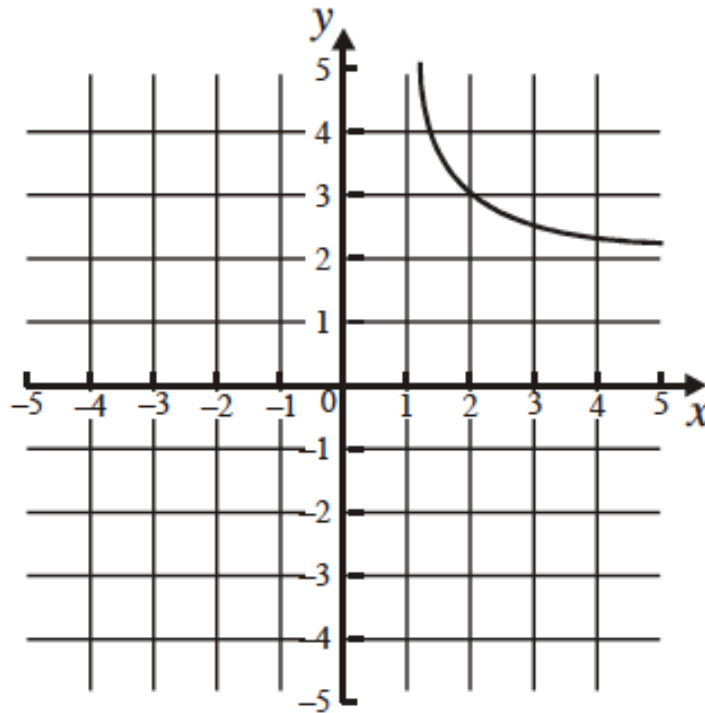


ASSIGNMENT: Reverse Chain Rule Integration [non-calc]

- 59.) (a) Consider the function $f(x) = 2 + \frac{1}{x-1}$. The diagram below is a sketch of part of the graph of $y = f(x)$.



Copy and complete the sketch of $f(x)$.

(2)

- (b) (i) Write down the x -intercepts and y -intercepts of $f(x)$.

- (ii) Write down the equations of the asymptotes of $f(x)$.

(4)

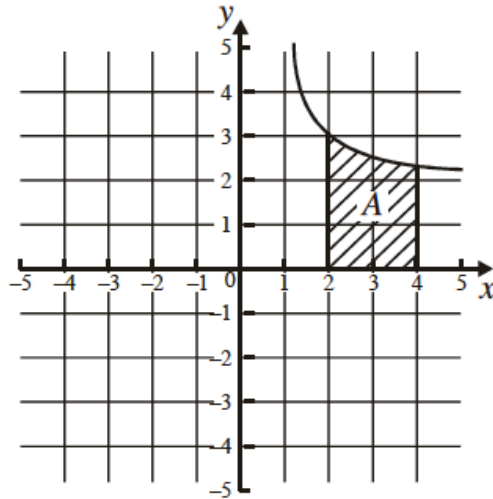
- (c) (i) Find $f'(x)$.

- (ii) There are no maximum or minimum points on the graph of $f(x)$.
Use your expression for $f'(x)$ to explain why.

(3)

part d) of the same problem continues below...

The region enclosed by the graph of $f(x)$, the x -axis and the lines $x = 2$ and $x = 4$, is labelled A , as shown below.



- (d) (i) Find $\int f(x) dx$.
- (ii) Write down an expression that represents the area labelled A .
- (iii) Find the area of A .

(7)
(Total 16 marks)

2) Find the integral of $f(x)$. $f(x) = 5 \cos \frac{\pi}{4}x$

3) Given that $f(x) = (2x + 5)^3$ find

(a) $f'(x)$;

(b) $\int f(x)dx$.