

- Find the domain of  $f(x) = \frac{x}{\sqrt{x^3 - 4x^2 + x + 6}}$
- Given the functions  $f(x) = \frac{x+1}{2x-3}$  and  $g(x) = x + 1$ , find;
  - $f(x) + g(x)$
  - $f(x) - g(x)$
- The function  $g$  is given by  $g(x) = ax^2 - b$ . If  $g(2) = 5$  and  $g(-1) = 2$ , find the values of  $a$  and  $b$  and hence find  $g(-4)$ .
- Evaluate:
  - $\lim_{x \rightarrow 1} \frac{\sqrt[3]{x}-1}{x-1}$
  - $\lim_{x \rightarrow 2} \frac{\sqrt{x-2}}{\sqrt[3]{x-2}}$
- Study the continuity of  $f(x) = \frac{x^2-4}{x-2}$  at  $x=2$
- Find the vertical asymptote for  $g(x) = \frac{x^3-2x-4}{4-x^2}$
- Evaluate ;
 
$$\lim_{x \rightarrow 0} \frac{\sin x}{x}$$
- A ball is thrown vertically into air so that it reaches a height of  $y = 19.6t - 4.9t^2$  meters in  $t$  seconds.
  - Find the time taken and acceleration of the ball at time  $t$  seconds.
  - Find the time taken for the ball to reach its highest point
  - How high did the ball rise
  - At what time(s) would the ball be at half its maximum height?
- Find the derivative of the function  $f(x) = 2x^2 + 3x + 4$  from the first principle.
- Find the derivative of  $f \circ g$  if  $f(x) = x^2 + 3x + 3$  and  $g(x) = \frac{x^2+1}{x}$ .