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MATH1013 Lab Worksheet No. 2

Question 1

Find all values of x for which the following functions are continuous.

(a) $f(x) = \sqrt{2x-3} + x^2$

When x is less than 1.5 there is a square root of a negative number and the function is therefore undefined at that point.

$f(x)$ is continuous for all $x \geq 1.5$, $x \in [1.5, \infty)$

(b) $f(x) = \dfrac{5}{x^3 - x^2}$

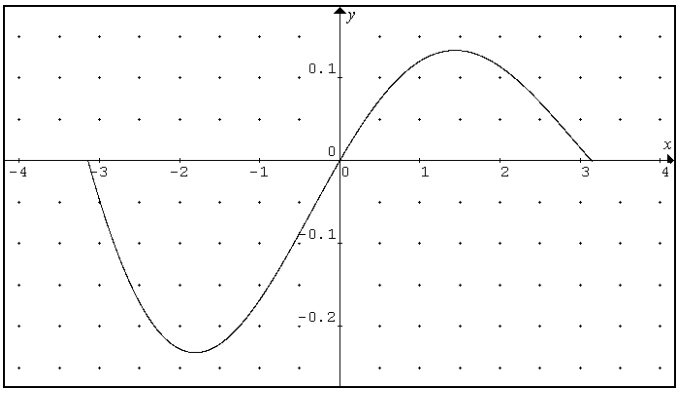
Factorise the denominator.

$$f(x) = \frac{5}{x^2(x-1)}$$

If either x^2 or $(x-1)$ is equal to zero then the function becomes undefined at that point. This occurs when $x = 0$ and also when $x = 1$. Therefore the function is continuous at $x < 0$, $0 < x < 1$ and $x > 1$. $x \in (-\infty, 0) \cup (0,1) \cup (1, \infty)$.

Question 2

(a) Use a graphing utility to find the maximum and minimum values of the function $\dfrac{\sin x}{6+x}$ on $[-p, p]$.



$Maximum = (1.437, 0.133)$

$Minimum = (-1.805, -0.232)$