

**Name:****Tutorial time:**

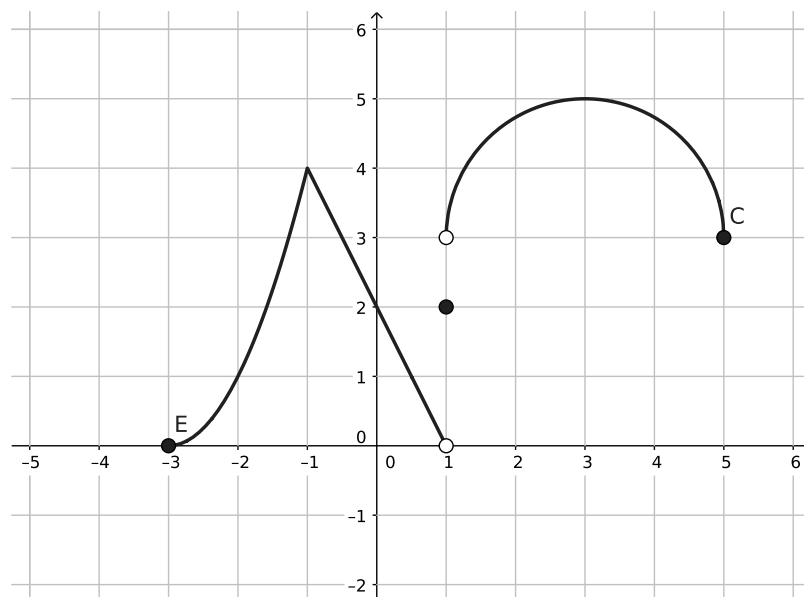
1. Evaluate the following limits:

[3]            (a)  $\lim_{x \rightarrow 3} \frac{x^2 - 5x + 6}{x^2 - 4x + 3}$

[3]            (b)  $\lim_{x \rightarrow 0} \frac{\sin(5x)}{x}$

[3]            (c)  $\lim_{x \rightarrow 0} \left( \frac{1}{x} - \frac{1}{x^2 + x} \right)$  (Suggestion: common denominator.)

2. The graph of a function  $f$  is given below:



- [1] (a) What is the domain of  $f$ ?
- [1] (b)  $\lim_{x \rightarrow -1^-} f(x) = \underline{\hspace{2cm}}$  and  $\lim_{x \rightarrow -1^+} f(x) = \underline{\hspace{2cm}}$
- [1] (c)  $\lim_{x \rightarrow 1^-} f(x) = \underline{\hspace{2cm}}$  and  $\lim_{x \rightarrow 1^+} f(x) = \underline{\hspace{2cm}}$
- [1] (d) On what interval(s) is  $f$  continuous?
- [2] 3. What are the horizontal and vertical asymptotes (if any) of  $f(x) = \frac{\sqrt{x^2 + 1}}{x - 1}$ ?