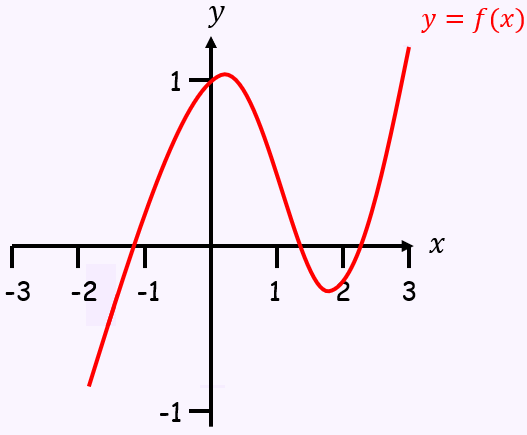
**10A Roots within Intervals**

1. The diagram shows a sketch of the curve where
2. Explain how the graph shows that has a root between and .

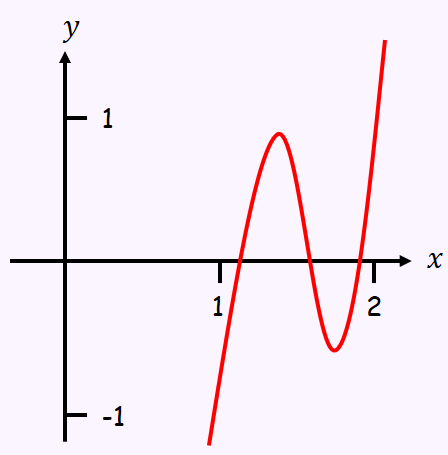


1. Show that has a root between and
2. The graph of the function

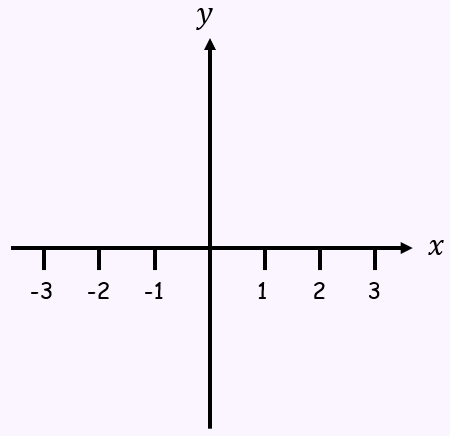
is shown in the diagram.

A student observes that and are both negative and states that has no roots in the interval

1. Explain, referring to the diagram, why the student is incorrect



1. Calculate , and and use your answer to explain why there are at least 3 roots in the interval .
2. Using the same axes, sketch the graphs of and . Explain how your diagram shows that the function has only one root



1. Show that this root lies in the interval
2. Given that the root of , show that correct to 3 decimal places