

1. a) Using the definition, find the derivative of $f(x) = x^2 + x$.

b) Now find the slope and equation of the line that is tangent to $f(x) = x^2 + x$ at $x = 1$.

c) Is $f(x) = x^2 + x$ increasing or decreasing at $x = 1$?

2. a) Using the definition, find the derivative of $y = \frac{1}{x}$

(Hint: when you have fractions of fractions, remember you can multiply top and bottom by the LCD)

b) Now find the rate of change of $y = \frac{1}{x}$ where $x = 2$.

Q: What has a head and a tail, but no body?