

Worksheet 9/11/2024

1) The point $P(1,1)$ lies on the curve $y = \frac{1}{2x-1}$. Let Q be the point $(x, \frac{1}{2x-1})$, find the slope of the secant line PQ (correct to six decimal places) for the following values of x .

a) 0.9

b) 0.99

c) 0.999

d) 1.1

e) 1.01

f) 1.001

2) From the above results, can you guess the slope of the tangent line to the curve $y = \frac{1}{2x-1}$ at $P(1,1)$?

3) A particle is moving back on forth on a straight line. Its position on the straight line is a function of time and is given by $s = \sin(\pi t)$. Find the average velocity during each time period (correct to six decimal places). Make sure to use radian when computing the sine function.

a) [1.9, 2]

b) [1.99, 2]

c) [1.999, 2]

d) [2, 2.1]

e) [2, 2.01]

f) [2, 2.001]

4) From the above results, can you guess the instantaneous velocity of the particle when $t = 2$?