

Chapter 5 Review [Some problems to ponder]

Non-calculator problems:

If $f(x) = \tan(e^{2x})$, then $f'(x) =$

If $F(x) = \int_{e^3}^x \frac{10}{25 + \ln(2t)} dt$, then $F'(e^3) =$

Find the average value of $f(x) = \frac{1}{9 + x^2}$ for the closed interval $[0, 3]$

$$\int_e^{e^3} \frac{dx}{x \ln x}$$

If $f(x) = \tan x + e^{-x^2}$, then $f''(0) =$

If $f(x) = \frac{e^{-x^2}}{x^2 + 1}$, then $f'(1) =$

For $x > 0$, $f'(x) = \frac{1 + \ln x}{x^2 + 3}$. Find all intervals for which $f(x)$ is increasing.

Calculator problems

If $f'(x) = \ln(5 + e^x)$ and $f(0) = 10$, then $f(12) =$

Let $f(x) = 7x^2 - 5x + 3$ and let g be the inverse function of f . What is the value of $g'(21)$?

Free Response Problems to consider:

[These are on your Chapter 5 handout]

2003AB 4B [non-calculator]

A particle moves along the x -axis with velocity at time $t \geq 0$ given by $v(t) = -1 + e^{1-t}$

- (a) Find the acceleration of the particle at time $t = 3$
- (b) Is the speed of the particle increasing at time $t = 3$?
Justify your answer [using Calculus!]
- (c) Find all values of t at which the particle changes direction. Justify your answer [using Calculus!]
- (d) Find the total distance traveled by the particle over the time interval $0 \leq t \leq 3$.