SIT190 - PAGE - WEEK 9

TRIMESTER 1, 2024

Task 1: Give-it-a-go and Give-it-a-go-again

(1) Attempt the Give-it-a-go quiz early in the week. Take a screenshot of the results.
(2) Review your quiz results.
   (a) If you did not achieve full marks, identify a question that you need answered in order to understand the material.
   (b) Identify and implement a strategy to address this question. For example, you might submit a question to the weekly discussion forum, visit the HelpHub or Maths Mentors, ask the unit chair, or do further reading.
   (c) Describe the question you identified and your strategy for addressing it (2-4 sentences).
(3) Attempt the Give-it-a-go-again quiz later in the week. Take a screenshot of the results.
   Note: your screenshot should include the summary of results including the session ID. Remember, you must achieve at least 60% in this quiz.
(4) Submit a short reflection (approximately 80 words) on your improvement between the Give-it-a-go and Give-it-a-go again quizzes. Explain how your strategy helped. If it was not useful, explain why and suggest what you might do next time.

Task 2: Derivative

(1) For each of the following functions, identify which rule (the product rule, quotient rule or chain rule) you would use to differentiate the function. Give a 1-2 sentence explanation justifying your answer.

   (a) $y = \cos(x^{2/5} + 2)$

   (b) $g(x) = \frac{\ln(x^3)}{x}$

   (c) $f(x) = e^{3x}\sin(x/15)$

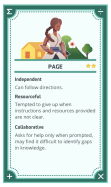
(2) Use the product rule to differentiate $y = e^{2x}(3x^5 - x^2)$.

(3) Use the quotient rule to differentiate $y = \frac{\tan(3x)}{3x-9}$, $x \neq 3$

(4) Use the chain rule to differentiate $y = \ln(7x^3 - 5x^2)$, $x > 0$

(5) The displacement (in metres) of a particle at time t seconds is given by $s = 2000t^2 - 30t^4$ for $0 \leq t \leq 90$.

(a) Find the velocity and acceleration of the particle at time t.
(b) What is the displacement, velocity and acceleration at time $t = 1$ second?



Submission

To successfully complete this assessment, you must submit:

Task 1: Quizzes, Question, Strategy and Reflection

1.1 Screenshot of results of Give-it-a-go quiz.
1.2 Screenshot of results of Give-it-a-go-again quiz (You must achieve at least 60% in this quiz).
1.3 Describe the question you identified and your strategy for addressing it (2-4 sentences).
1.4 Submit a short reflection (approximately 80 words) on your improvement between the Give-it-a-go and Give-it-a-go again quizzes.

Task 2: Derivative

2.1 For each of the functions in Q1, provide the name of the rule and 1-2 sentence explanation.
2.2 Identify the functions $u(x)$ and $v(x)$ and show all working to find the derivative of the function.
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2.4 Identify the function $u(x)$ and show all working to find the derivative of the function.
2.5 (a) The velocity and acceleration function including all working.
(b) The displacement, velocity and acceleration when $t = 1$ showing all working and units.

Remember to simplify your answers and give units.

Useful resources

- Watch, Read and Think Section 8.
  - 8.2 gives product and quotient rules
  - 8.3 gives chain rule
  - 8.5 looks at displacement, velocity and acceleration.
- Videos (Other Rules: Product, Quotient, Chain Rules, and Applications of the derivative)
- You may also find it useful to refer to the Formula Sheet.