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← MATH 260, section 01, Spring 2021

Math260S21 - Test 3 (Exam)

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Current Score	Due Date
QUESTION 1 2 3 4	**FRI, APR 30, 2021** 3:54 AM GMT+5:30 Request Extension

Instructions

Please do the exercises on paper, then upload pictures of the work (please only PDF, PNG, JPG/JPEG or DOC/DOCX files)

Description

Assignment Submission & Scoring

Assignment Submission

For this assignment, you submit answers by question parts. The number of submissions remaining for each question part only changes if you submit or change the answer.

Assignment Scoring

Your last submission is used for your score.

(a) [4 Points] Find the interval on which f is increasing. (Enter your answer using interval notation.)

$(-\infty,-1),(9,\infty)$

Find the interval on which f is decreasing. (Enter your answer using interval notation.)

$(-1,9)$

(b) [6 Points] Find the local minimum and maximum values of f.

local minimum value 9

local maximum value -1

(c) [6 Points] Find the inflection point.

$(x, y) = ($ $4,-233$ $)$

Find the interval on which f is concave up. (Enter your answer using interval notation.)

$(4,\infty)$

Show My Work (Required)

What steps or reasoning did you use? Your work counts towards your score.

f(x)=x^3-12x^2-27x+3
f'(x)=3x^2-24x-27
3x^2-24x-27=0
critical points are x=-1,9
Therefore, f(x) increasing on (-inf,-1),(9,inf) and decreasing on (-1,9)
f"(x)=6x-24
inflection point at f"(x)=0
6x-24=0
x=4
the function is concave up on (4,inf) and concave down on (-inf,4)

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2. DETAILS **SCALC8 6.8.015.** MY NOTES

Find the limit. Use l'Hospital's Rule where appropriate. If there is a more elementary method, consider using it.

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3. DETAILS MY NOTES

A particle moves according to a law of motion $s = f(t)$, $t \geq 0$, where t is measured in seconds and s in feet.

$f(t) = t^3 - 12t^2 + 36t$

(a) [3 Points] Find the velocity at time t.

$v(t) =$

$3t2-24t+36$

(b) [1 Point] What is the velocity after 5 s?

$v(5) =$ -9 ft/s

$a(5) =$ 6 ft/s^2

Show My Work (Required)

What steps or reasoning did you use? Your work counts towards your score.

f(t)=t^3-12t^2+36t
velocity = f

$h(x) = x^3 + 3x^2 + 8$ on $[-3, 2]$

maximum	28
minimum	8

Show My Work (Required)

What steps or reasoning did you use? Your work counts towards your score.

h(-3)=(-3)^3+3*(-3)^2+8=8
Therefore, absolute minimum is 8
h(2) = 2^23+3*2^2+8=28
Absolute maximum is 28

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