MATH 141 HW 10 (6458515)

Due: Fri Oct 17 2014 11:59 PM EDT

Question 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

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1. Question Details SCalcET6 4.1.029. [703671]

Find the critical number of the function.

$$f(x) = 5x^2 + 8x$$

$x =$ [ ] -0.8

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2. Question Details SCalcET6 4.1.031.MI. [1387549]

Find the critical numbers of the function.

$$f(x) = x^3 + 6x^2 - 15x$$

$x =$ [ ] -5 (smaller value)
$x =$ [ ] 1 (larger value)

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3. Question Details SCalcET6 4.1.035.MI. [1387732]

Find the critical numbers of the function.

$$g(y) = \frac{y - 3}{y^2 - 3y + 9}$$

$y =$ [ ] 0 (smaller value)
$y =$ [ ] 6 (larger value)

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4. Question Details SCalcET6 4.1.036. [1290795]

Find the critical numbers of the function.

$$h(p) = \frac{p - 3}{p^2 + 8}$$

Get ADOBE FLASH PLAYER

$p =$ Flash Player version 10 or higher is required for this question. You can get Flash Player free from Adobe's website. (smaller value)

$3 - \sqrt{17}$

Get ADOBE FLASH PLAYER

$p =$ Flash Player version 10 or higher is required for this question. You can get Flash Player free from Adobe's website. (larger value)

$3 + \sqrt{17}$

5. Question Details SCalcET6 4.1.037.MI. [1387546]

Find the critical numbers of the function.

$h(t) = t^{3/4} - 5t^{1/4}$

$t =$ [ ] 0 (smaller value)
$t =$ [ ] 25/9 (larger value)

6. Question Details SCalcET6 4.1.038. [703901]

Find the critical points of the function.

$g(x) = \sqrt{81 - x^2}$

$x =$ [ ] -9 (smallest value)
$x =$ [ ] 0
$x =$ [ ] 9 (largest value)

7. Question Details SCalcET6 4.1.039. [803564]

Find the critical numbers of the function. (Enter your answers as fractions.)

$F(x) = x^{4/5}(x - 5)^2$

$x =$ [ ] 0 (smallest value)
$x =$ [ ] 10/7
$x =$ [ ] 5 (largest value)

8. Question Details SCalcET6 4.1.040. [803563]

Find the critical number of the function.

$g(x) = x^{1/7} - x^{-6/7}$

$x =$ [ ] -6

9. Question Details SCalcET6 4.1.043. [1291753]

Find the critical numbers of the function.

$f(x) = x^4 e^{-7x}$

Get ADOBE FLASH PLAYER

$x =$ Flash Player version 10 or higher is required for this question. You can get Flash Player free from Adobe's website. (smaller value)

0

Get ADOBE FLASH PLAYER

$x =$ Flash Player version 10 or higher is required for this question. You can get Flash Player free from Adobe's website. (larger value)

$\frac{4}{7}$

10. Question Details SCalcET6 4.1.044. [1291505]

Find the critical numbers of the function.

$f(x) = x^{-6}\ln(x)$

$x =$ Flash Player version 10 or higher is required for this question.
You can get Flash Player free from Adobe's website.

11. Question Details SCalcET6 4.1.047. [803583]

Find the absolute maximum and absolute minimum values of f on the given interval.

$f(x) = 2x^2 - 12x + 2$
$[0, 7]$

-16 (min)
16 (max)

12. Question Details SCalcET6 4.1.049.MI. [1387866]

Find the absolute maximum and absolute minimum values of f on the given interval.

$f(x) = 2x^3 - 3x^2 - 72x + 5$
$[-4, 5]$

-203 (min)
140 (max)

13. Question Details SCalcET6 4.1.050. [803566]

Find the absolute maximum and absolute minimum values of f on the given interval.

$f(x) = x^3 - 6x^2 + 9x + 3$
$[-1, 7]$

-13 (min)
115 (max)

14. Question Details SCalcET6 4.1.051. [803574]

Find the absolute minimum and absolute maximum values of f on the interval below.

$f(x) = x^4 - 2x^2 + 5$
$[-2, 3]$

4 (min)
68 (max)

15. Question Details SCalcET6 4.1.052. [803559]

Find the absolute maximum and absolute minimum values of *f* on the given interval.

$f(x) = (x^2 - 1)^3$

[-1, 2]

[ ] -1 (min)
[ ] 27 (max)

16. Question Details SCalcET6 4.1.053. [803551]

Find the absolute maximum and absolute minimum values of *f* on the given interval.

$$f(x) = \frac{x}{x^2 + 1}$$

[0, 2]

[ ] 0 (min)
[ ] 0.5 (max)

17. Question Details SCalcET6 4.1.054.MI. [1728717]

Find the absolute maximum and absolute minimum values of *f* on the given interval.

$$f(x) = \frac{x^2 - 4}{x^2 + 4}$$

[-4, 4]

[ ] -1 (min)
[ ] 3/5 (max)

18. Question Details SCalcET6 4.1.057.MI. [1387442]

Find the absolute maximum and absolute minimum values of *f* on the given interval. (Round all answers to two decimal places.)

$f(t) = 2 \cos t + \sin 2t$

$[0, \frac{\pi}{2}]$

[ ] 0.00 (min)
[ ] 2.60 (max)

19. Question Details SCalcET6 4.1.062. [803584]

Find the absolute maximum and absolute minimum values of *f* on the given interval.

$f(x) = e^{-x} - e^{-2x}$

[0, 1]

[ ] 0 (min)
[ ] 0.25 (max)

20. Question Details SCalcET6 4.3.009.MI. [1386987]

Consider the equation below. (If you need to use -∞ or ∞, enter -INFINITY or INFINITY.)

$f(x) = 2x^3 + 3x^2 - 180x$

(a) Find the intervals on which f is increasing. (Enter the interval that contains smaller numbers first.)

([ ] -INFINITY , [ ] -6) ∪ ([ ] 5 , [ ] INFINITY)

Find the interval on which f is decreasing.

([ ] -6 , [ ] 5) (b) Find the local minimum and maximum values of f.

[ ] -575 (min)

[ ] 756 (max) (c) Find the inflection point.

([ ] -0.5 , [ ] 90.5)

Find the interval on which f is concave up.

([ ] -0.5 , [ ] INFINITY)

Find the interval on which f is concave down.

([ ] -INFINITY , [ ] -0.5)

21. Question Details SCalcET6 4.3.010. [703799]

Consider the equation below. (If you need to use -∞ or ∞, enter -INFINITY or INFINITY.)

$f(x) = 4x^3 + 18x^2 - 216x + 4$

(a) Find the intervals on which f is increasing. (Enter the interval that contains smaller numbers first.)

([ ] -INFINITY , [ ] -6) ∪ ([ ] 3 , [ ] INFINITY)

Find the interval on which f is decreasing.

([ ] -6 , [ ] 3)

(b) Find the local minimum and maximum values of f.

[ ] 1084 (max)

[ ] -374 (min)

(c) Find the inflection point.

([ ] -1.5 , [ ] 355)

Find the interval on which f is concave up.

([ ] -1.5 , [ ] INFINITY)

Find the interval on which f is concave down.

([ ] -INFINITY , [ ] -1.5)

22. Question Details SCalcET6 4.3.011. [808127]

Consider the equation below. (Round the answers to two decimal places. If you need to use -∞ or ∞, enter -INFINITY or INFINITY.)

$f(x) = x^4 - 50x^2 + 9$

(a) Find the intervals on which f is increasing. (Enter the interval that contains smaller numbers first.)

([ ] [-5] , [ ] [0]) ∪ ([ ] [5] , [ ] [INFINITY])

Find the intervals on which f is decreasing. (Enter the interval that contains smaller numbers first.)

([ ] [-INFINITY] , [ ] [-5]) ∪ ([ ] [0] , [ ] [5])

(b) Find the local minimum and maximum values of f.

[ ] [-616] (min)

[ ] [9] (max)

(c) Find the inflection points.

([ ] [-2.89] , [ ] [-338.22]) (smaller x value)

([ ] [2.89] , [ ] [-338.22]) (larger x value)

Find the intervals on which f is concave up. (Enter the interval that contains smaller numbers first.)

([ ] [-INFINITY] , [ ] [-2.89]) ∪ ([ ] [2.89] , [ ] [INFINITY])

Find the interval on which f is concave down.

([ ] [-2.89] , [ ] [2.89])

23. Question Details SCalcET6 4.3.012. [808124]

You are given the following.

$$f(x) = \frac{x^2}{x^2 + 3}$$

(a) On what interval(s) is f increasing? (Select all that apply.)

- ☐ (-∞, -1)
- ☐ (-∞, 0)
- ☐ (-∞, 1)
- ☐ (-1, 1)
- ☐ (-1, ∞)
- ☐ [ ] (0, ∞)
- ☐ (-3, ∞)
- ☐ none of these

On what interval(s) is f decreasing? (Select all that apply.)

- [ ] (-∞, ∞)
- [ ] (-∞, 0)
- [ ] (-∞, 1)
- [ ] (-1, 3)
- [ ] (-1, 1)
- [ ] (0, 1)
- [ ] (-1, ∞)
- [ ] (0, ∞)
- [ ] (1, ∞)
- [ ] none of these

(b) What are the local maximum value(s) of *f*? (Select all that apply.)

- [ ] -1
- [ ] 0
- [ ] 1/4
- [ ] 1/2
- [ ] 1
- [ ] none of these

What are the local minimum value(s) of *f*? (Select all that apply.)

- [ ] -1
- [ ] 0
- [ ] 1/4
- [ ] 1/2
- [ ] 1
- [ ] none of these

(c) On what interval(s) is *f* concave upward? (Select all that apply.)

- [ ] (-∞, 0)
- [ ] (-∞, 2)
- [ ] (-∞, -1)
- [x] (-1, 1)
- [ ] (-1, 2)
- [ ] (0, ∞)
- [ ] (-1, ∞)
- [ ] (2, ∞)
- [ ] none of these

On what interval(s) is *f* concave downward? (Select all that apply.)

- [ ] (-∞, 0)
- [ ] (-∞, 2)
- [x] (-∞, -1)
- [ ] (-1, 2)
- [ ] (0, ∞)
- [x] (1, ∞)
- [ ] (-1, ∞)
- [ ] none of these

What are the *x*-coordinate(s) of the inflection point(s) of *f*? (Select all that apply.)

- [ ] -2
- [x] -1
- [ ] 0
- [x] 1
- [ ] 2
- [ ] none of these

24. Question Details SCalcET6 4.3.019. [808122]

Find the local maximum and minimum values of *f* using both the First and Second Derivative Tests.

$f(x) = x^5 - 5x + 4$

	8 (max)
	0 (min)

25. Question Details SCalcET6 4.3.020. [703855]

Find the local maximum and minimum values of f using both the First and Second Derivative Tests.

$$f(x) = \frac{x}{x^2 + 25}$$

$y =$ [ ] 0.1 (max)
$y =$ [ ] -0.1 (min)

26. Question Details SCalcET6 4.3.021. [703689]

Find the local maximum value of f using both the First and Second Derivative Tests.

$f(x) = x + \sqrt{9 - x}$

$y =$ [ ] 9.25

27. Question Details SCalcET6 4.3.022. [808119]

Find the critical numbers of the function and describe the behavior of f at these numbers. (List your answers in increasing order.)

$f(x) = x^6(x - 4)^5$

At [ ] 0 the function has ---Select--- a local maximum .
At [ ] 2.18 the function has ---Select--- a local minimum .
At [ ] 4 the function has ---Select--- not a max or a min .

28. Question Details SCalcET6 4.3.023.MI. [1387334]

Suppose f'' is continuous on $(-\infty, \infty)$.

(a) If $f'(-1) = 0$ and $f''(-1) = -1$, what can you say about f?

- At $x = -1$, f has local maximum.
- At $x = -1$, f has a local minimum.
- At $x = -1$, f has not a maximum or minimum.
- There is not enough information.

(b) If $f'(4) = 0$ and $f''(4) = 0$, what can you say about f?

- At $x = 4$, f has local maximum.
- At $x = 4$, f has a local minimum.
- At $x = 4$, f has not a maximum or minimum.
- There is not enough information.

29. Question Details SCalcET6 4.3.034. [803601]

Consider the following.

$f(x) = 5 + 3x - x^3$

(a) Find the interval(s) of increase. (Select all that apply.)

- [ ] (-∞, -1)
- [ ] (-∞, 0)
- [ ] (-2, 0)
- [ ] (0, 2)
- [x] (-1, 1)
- [ ] (1, ∞)
- [ ] (0, ∞)
- [ ] (-∞, ∞)
- [ ] none of these

Find the interval(s) of decrease (Select all that apply.)

- [x] (-∞, -1)
- [ ] (-∞, 0)
- [ ] (-1, 0)
- [ ] (0, 1)
- [ ] (-1, 1)
- [x] (1, ∞)
- [ ] (0, ∞)
- [ ] (-∞, ∞)
- [ ] none of these

(b) Find the local maximum value(s). (Select all that apply.)

- [ ] -∞
- [ ] -1
- [ ] 3
- [ ] 6
- [ ] 4
- [x] 7
- [ ] ∞
- [ ] none of these

Find the local minimum value(s). (Select all that apply.)

- [ ] -∞
- [ ] -1
- [x] 3
- [ ] 6
- [ ] 4
- [ ] 7
- [ ] ∞
- [ ] none of these

(c) On what interval(s) is *f* concave upward? (Select all that apply.)

- [x] (-∞, 0)
- [ ] (0, 2)
- [ ] (0, 1)
- [ ] (-1, 1)
- [ ] (1, ∞)
- [ ] (0, ∞)
- [ ] (-∞, ∞)
- [ ] none of these

On what interval(s) is *f* concave downward? (Select all that apply.)

- [ ] (-∞, -1)
- [ ] (-∞, 0)
- [ ] (-1, 0)
- [ ] (-2, 1)
- [ ] (-1, 1)
- [x] (0, ∞)
- [ ] (-∞, ∞)
- [ ] none of these

What are the inflection point(s) of *f* ? (Select all that apply.)

- [ ] (-1, 0)
- [x] (0, 5)
- [ ] (1, 4)
- [ ] (2, 0)
- [ ] none of these

(d) Use this information to sketch the graph. Check your work with a graphing device if you have one. (Do this on paper. Your teacher may ask you to turn in this work.)

30. Question Details SCalcET6 4.3.035. [803604]

Consider the function below. (Round the answers to three decimal places. If you need to use -∞ or ∞, enter -INFINITY or INFINITY.)

$f(x) = 1 + 4x^2 - x^4$

(a) Find the intervals of increase. (Enter the interval that contains smaller numbers first.)

([ ] , -INFINITY , [ ] , -1.414) ∪ ([ ] , 0 , [ ] , 1.414)

Find the intervals of decrease. (Enter the interval that contains smaller numbers first.)

([ ] , -1.414 , [ ] , 0) ∪ ([ ] , 1.414 , [ ] , INFINITY)

(b) Find the local minimum value.

[ ] 1

Find the local maximum values.

[ ] 5 (smaller x value)

[ ] 5 (larger x value)

(c) Find the inflection points.

([ ] , -0.816 , [ ] , 3.222) (smaller x value)

([ ] , 0.816 , [ ] , 3.222) (larger x value)

Find the interval the function is concave up.

([ ] , -0.816 , [ ] , 0.816)

Find the intervals the function is concave down. (Enter the interval that contains smaller numbers first.)

([ ] , -INFINITY , [ ] , -0.816) ∪ ([ ] , 0.816 , [ ] , INFINITY)

(d) Use this information to sketch the graph of the function. (Do this on paper. Your instructor may ask you to turn in this graph.)

31. Question Details SCalcET6 4.3.036.MI. [1386494]

You are given the following function.

$g(x) = 250 + 8x^3 + x^4$

(a) Find the interval(s) of increase. (Select all that apply.)

- ☐ (-∞, -4)
- ☐ (-∞, ∞)
- ☐ (-8, 0)
- ☑ (-6, ∞)
- ☐ (-∞, -6)

Find the interval(s) of decrease. (Select all that apply.)

- [ ] (-6, 6)
- [ ] (-4, 0)
- [ ] (0, ∞)
- [x] (-∞, -6)
- [ ] (-6, ∞)
- [ ] (-∞, -4)

(b) Find the local maximum value(s). (Select all that apply.)

- [ ] -6
- [ ] 0
- [ ] -182
- [ ] 200
- [x] none of these

Find the local minimum value(s). (Select all that apply.)

- [ ] 0
- [ ] -6
- [ ] none of these
- [ ] 200
- [x] -182

(c) Find the interval(s) where the graph is concave upward. (Select all that apply.)

- [ ] (-4, 0)
- [x] (0, ∞)
- [ ] (-6, 0)
- [ ] (-∞, 6)
- [x] (-∞, -4)

Find the interval(s) where the graph is concave downward. (Select all that apply.)

- [ ] (-∞, 6)
- [ ] (0, ∞)
- [ ] (-∞, -4)
- [ ] (-6, 0)
- [x] (-4, 0)

Find the inflection points.

([ ] -4 , [ ] -6) (smaller x value)

([ ] 0 , [ ] 250) (larger x value)

(d) Use this information to sketch the graph. (Do this on paper. Your teacher may ask you to turn in this work.) Check your work with a graphing device if you have one.

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32. Question Details SCalcET6 4.3.037. [803617]

Consider the function below. (If you need to use -∞ or ∞, enter -INFINITY or INFINITY.)

$h(x) = (x + 2)^5 - 5x - 3$

(a) Find the intervals of increase. (Enter the interval that contains smaller numbers first.)

([ ] -INFINITY , [ ] -3) ∪ ([ ] -1 , [ ] INFINITY)

Find the interval of decrease.

([ ] -3 , [ ] -1)

(b) Find the local minimum value.

[ ] 3

Find the local maximum value.

[ ] 11

(c) Find the inflection point.

([ ] -2 , [ ] 7)

Find the interval the function is concave up.

([ ] -2 , [ ] INFINITY)

Find the interval the function is concave down.

([ ] -INFINITY , [ ] -2)

(d) Use this information to sketch the graph of the function. (Do this on paper. Your instructor may ask you to turn in this graph.)

33. Question Details SCalcET6 4.3.045.MI. [1386581]

Consider the function below. (If you need to use -∞ or ∞, enter -INFINITY or INFINITY.)

$$f(x) = \frac{x^2}{x^2 - 16}$$

(a) Find the vertical and horizontal asymptotes.

x = [ ] -4 (smaller value)

x = [ ] 4 (larger value)

y = [ ] 1

(b) Find the intervals where the function is increasing. (Enter the interval that contains smaller numbers first.)

([ ] -INFINITY , [ ] -4) ∪ ([ ] -4 , [ ] 0)

Find the intervals where the function is decreasing. (Enter the interval that contains smaller numbers first.)

([ ] 0 , [ ] 4) ∪ ([ ] 4 , [ ] INFINITY)

(c) Find the local maximum value.

[ ] 0

(d) Find the intervals where the function is concave up. (Enter the interval that contains smaller numbers first.)

([ ] -INFINITY , [ ] -4) ∪ ([ ] 4 , [ ] INFINITY)

Find the interval where the function is concave down.

([ ] -4 , [ ] 4)

(e) Use this information to sketch the graph of *f*. (Do this on paper. Your instructor may ask you to turn in this graph.)

34. Question Details SCalcET6 4.3.046. [803608]

Consider the function below. (If you need to use -∞ or ∞, enter -INFINITY or INFINITY.)

$$f(x) = \frac{x^2}{(x-4)^2}$$

(a) Find the vertical and horizontal asymptotes.

x = [ ] 4

y = [ ] 1

(b) Find the interval where the function is increasing.

([ ] 0 , [ ] 4)

Find the intervals where the function is decreasing. (Enter the interval that contains smaller numbers first.)

([ ] -INFINITY , [ ] 0) ∪ ([ ] 4 , [ ] INFINITY)

(c) Find the local minimum value.

[ ] 0

(d) Find the inflection point.

([ ] -2 , [ ] 0.111)

Find the interval where the function is concave up. (Enter the interval that contains smaller numbers first.)

([ ] -2 , [ ] 4) ∪ ([ ] 4 , [ ] INFINITY)

Find the intervals where the function is concave down.

([ ] -INFINITY , [ ] -2)

(e) Use this information to sketch the graph of f. (Do this on paper. Your instructor may ask you to turn in this graph.)

35. Question Details SCalcET6 4.3.053.MI. [1386587]

Suppose the derivative of a function f is given below. On what interval is f increasing? (Enter the interval that contains smaller numbers first. If you need to use -∞ or ∞, enter -INFINITY or INFINITY.)

$$f'(x) = (x + 2)^4(x - 5)^7(x - 6)^6$$

([ ] 5 , [ ] INFINITY)

Assignment Details

Name (AID): **MATH 141 HW 10 (6458515)**
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Code:
Locked: **Yes**
Author: **Blanco-Silva, Francisco (** blanco@math.sc.edu **)**
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