***Calculus 30: Chapter 5 Exam Review***

1. Determine f’(x) and f”(x) for the following functions
2. $y=6x^{4}+5x^{3}-8x$
3. $f\left(x\right)=\sqrt[3]{3x^{2}-4}$
4. For the given graph:

 

1. Without graphing, determine the absolute extrema of the following function in the given interval

$f\left(x\right)= 4x^{3}-12x-5$ ; x є [-3,3]

1. For the following function determine
2. The critical numbers
3. The intervals in which the function is increasing/decreasing
4. The intervals in which the function is concave up/down
5. The coordinates of any relative extrema
6. $y=x^{3}+6x^{2}-15x+90$
7. $y=2x^{3}-x^{4}$
8. $f\left(x\right)= \frac{x^{2}}{x+2}$
9. For the following function, find the following.
10. a sign analysis of $f^{'}\left(x\right)$
11. the intervals on which $f(x)$ is increasing and/or decreasing
12. the critical numbers
13. the relative extrema
14. a sign analysis of $f^{''}(x)$
15. the intervals on which $f(x)$ is concave up and concave down
16. the coordinates of any inflection points
17. the $x$and $y$ intercepts
18. the equations of any vertical and horizontal asymptotes
19. a careful sketch of the function
20. $y=\frac{x}{x^{2}-1}$
21. a sign analysis of $f^{'}\left(x\right)$
22. the intervals on which $f(x)$ is increasing and/or decreasing
23. the critical numbers
24. the relative extrema
25. a sign analysis of $f^{''}(x)$
26. the intervals on which $f(x)$ is concave up and concave down
27. the coordinates of any inflection points
28. the $x$and $y$ intercepts
29. the equations of any vertical and horizontal asymptotes
30. a careful sketch of the function
31. $f\left(x\right)=2x^{3}-3x^{2}-12x$
32. a sign analysis of $f^{'}\left(x\right)$
33. the intervals on which $f(x)$ is increasing and/or decreasing
34. the critical numbers
35. the relative extrema
36. a sign analysis of $f^{''}(x)$
37. the intervals on which $f(x)$ is concave up and concave down
38. the coordinates of any inflection points
39. the $x$and $y$ intercepts
40. the equations of any vertical and horizontal asymptotes
41. a careful sketch of the function
42. $f\left(x\right)=\frac{2x^{2}}{x^{2}+12}$
43. a sign analysis of $f^{'}\left(x\right)$
44. the intervals on which $f(x)$ is increasing and/or decreasing
45. the critical numbers
46. the relative extrema
47. a sign analysis of $f^{''}(x)$
48. the intervals on which $f(x)$ is concave up and concave down
49. the coordinates of any inflection points
50. the $x$and $y$ intercepts
51. the equations of any vertical and horizontal asymptotes
52. a careful sketch of the function
53. $y=3x^{5}-10x^{3}$
54. a sign analysis of $f^{'}\left(x\right)$
55. the intervals on which $f(x)$ is increasing and/or decreasing
56. the critical numbers
57. the relative extrema
58. a sign analysis of $f^{''}(x)$
59. the intervals on which $f(x)$ is concave up and concave down
60. the coordinates of any inflection points
61. the $x$and $y$ intercepts
62. the equations of any vertical and horizontal asymptotes
63. a careful sketch of the function
64. $y=\frac{3x}{(x+1)^{2}}$
65. a sign analysis of $f^{'}\left(x\right)$
66. the intervals on which $f(x)$ is increasing and/or decreasing
67. the critical numbers
68. the relative extrema
69. a sign analysis of $f^{''}(x)$
70. the intervals on which $f(x)$ is concave up and concave down
71. the coordinates of any inflection points
72. the $x$and $y$ intercepts
73. the equations of any vertical and horizontal asymptotes
74. a careful sketch of the function
75. $f\left(x\right)=3x^{\frac{2}{3}}-x^{2}$