

Review for 2nd Six Weeks Exam

For the following #1-5

- Find the intervals of increase or decrease
- Find the local maximum and minimum values
- Find the intervals of concavity and the inflection points
- Use the information from parts (a-c) to sketch the graph

1. $f(x) = x^3 + 3x^2 - 9x + 6$

2. $f(x) = -x^3 + 12x + 5$

3. $f(x) = x + \cos x \quad -2\pi \leq x \leq 2\pi$

4. $f(x) = 2\cos x - \cos 2x \quad 0 \leq x \leq 2\pi$

5. $f(x) = -2x^3 - 3x^2 - 6$

For the following #6

- Find the vertical and horizontal asymptotes
- Find the intervals of increase or decrease
- Find the local maximum and minimum values
- Find the intervals of concavity and the inflection points
- Use the information from parts (a-d) to sketch the graph of f .

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

For #7-8, Find extreme values of the function and where they occur.

7. $y = \sqrt{3 + 2x - x^2}$

8. $y = \frac{1}{\sqrt{1-x^2}}$

9. Find all values of
- c
- in the open interval
- (a,b)
- such that
- $f'(c) = \frac{f(b) - f(a)}{b - a}$

$$f(x) = \frac{x+1}{x} \quad \left[\frac{1}{2}, 2 \right]$$

10. Find all values of c in the open interval (a, b) such that $f'(c) = 0$

$$f(x) = \cos 2x \quad \left[\frac{-\pi}{12}, \frac{\pi}{6} \right]$$

Locate the absolute extrema of the function on the closed interval.

11. $f(x) = x^3 - 12x \quad [0, 4]$

12. $f(x) = x - 2\cos x \quad [-\pi, \pi]$

13. $f(x) = \frac{1}{x-2} \quad [0, 1]$