

Calculus Honors

Homework 2 Q3

Studyguide

Exercise 1.

Find the extrema of

1. $f(x) = 3x^4 - 4x^3$ on the interval $[-1,2]$.
2. $f(x) = 2(3 - x)$ on the interval $[-1,2]$.
3. $f(x) = -x^2 + 3x$ on the interval $[0,3]$.
4. $f(x) = x^3 - \frac{3}{2}x^2$ on the interval $[-1,2]$.
6. $f(x) = 3x^{\frac{2}{3}} - 2x$ on the interval $[-1,1]$.
7. $f(x) = \sqrt[3]{x}$ on the interval $[-1,1]$.
8. $f(x) = \frac{x}{2-x}$ on the interval $[0,2)$.

Exercise 2.

Use the 1st I and D Test to find the open interval on which the following functions are increasing or decreasing.

1. $f(x) = 3x^4 - 4x^3$.
2. $f(x) = \frac{x^5 - 5x}{5}$.
3. $f(x) = -x^2 + 3x$.
4. $f(x) = x^3 - \frac{3}{2}x^2$.
6. $f(x) = 3x^{\frac{2}{3}} - 2x$.
7. $f(x) = x^{\frac{1}{3}} + 1$.
8. $f(x) = \frac{x}{2-x}$.
9. $f(x) = \frac{x^2}{x^2 - 9}$.
10. $f(x) = x + \frac{1}{x}$.
11. $f(x) = \frac{x+3}{x^2}$.