
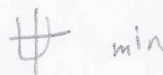


Find the all relative minimum and maximum values as well as the x-values at which they occur.

1. $f(x) = -2x^2 + 4x - 5$

$x = 0$
 $y = -5$
 Concave up


2. $f(x) = x^{\frac{1}{3}} - 4$

$x = 0$
 $y = -4$
 Concave up


List any extrema, and indicate any asymptote or points of inflections

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

$x = 14$

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

$x = 2$

In question 5-6, find the absolute maximum and minimum values.

5. $f(x) = x^2 - 3x$, $[2, 5]$ max
 $x = 0$

6. $f(x) = 3 - x^2$, $[-2, 4]$ min
 $x = 0$

7. From a thin piece of cardboard 25" x 25", square corners are cut out so the sides can be folded up to make an open box. What dimensions will yield a box of maximum volume? What is the maximum volume?

$[0, 12.5]$

$x = 10,6$

8. For $y = f(x) = 3x^2 + 4$, $x = 3$ and $\Delta x = .01$, find Δy and $f'(x)\Delta x$

9. Approximate $\sqrt{39}$ using $\Delta y \approx f'(x)\Delta x$

$\Delta y \approx 0,76$

$= 7$