Kuta Software - Infinite Precalculus

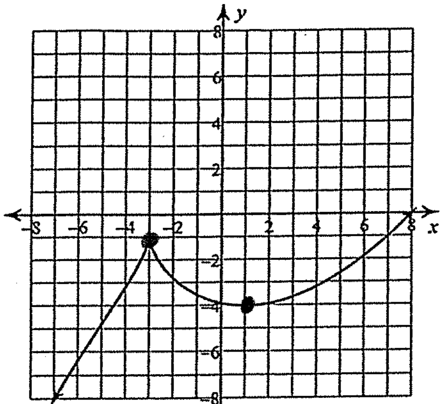
Name Key

Extrema, Increase and Decrease

Date 10/17 Period 1st/2nd

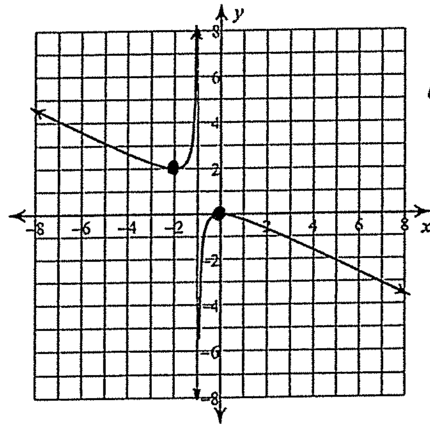
Approximate the relative extrema of each function.

1)



Local Min.: (1, -4)
Max.: (-3, -1)

2)



Local
Min.: (-2, 2)
Max.: (0, 0)

Use a graphing calculator to approximate the relative extrema of each function.

3) $y = -x^3 + 4x^2 - 4$

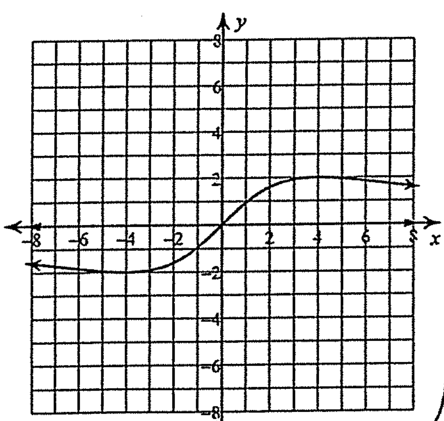
Local Min.: (0, -4)
Max.: (2.7, 5.5)

4) $y = \dfrac{x^2}{4x + 4}$

Local Min.: (0, 0)
Max.: (-2, -1)

Approximate the intervals where each function is increasing and decreasing.

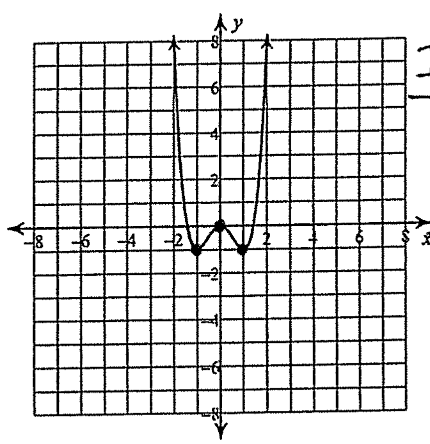
5)



$-\infty < x < -4$
$4 < x < \infty$

I: $-4 < x < 4$
D: $x < -4$, $x > 4$

6)



I: $-1 < x < 0$,
$x > 1$ $(1 < x < \infty)$
D: $x < -1$, $(-\infty < x < -1)$
$0 < x < 1$

Use a graphing calculator to approximate the intervals where each function is increasing and decreasing.

7) $y = x^4 - 2x^2 - 3$

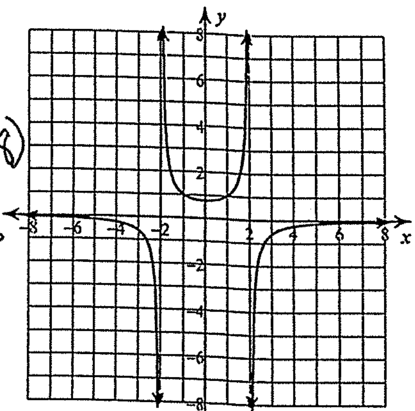
I: $-1 < x < 0$, $x > 1$ $(1 < x < \infty)$
D: $x < -1$ $(-\infty < x < -1)$, $0 < x < 1$

8) $y = -\dfrac{2}{x^2 - 1}$

I: $0 < x < 1$, $x > 1$
D: $x < -1$, $-1 < x < 0$

Approximate the relative and absolute extrema of each function. Then approximate the intervals where each function is increasing and decreasing.

9) $y = -\dfrac{3}{x^2 - 4}$

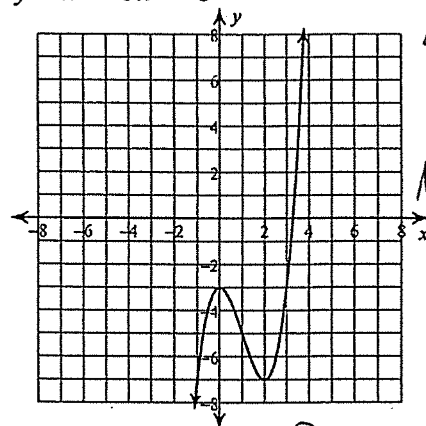


Local
Min: (0, .8)
No Globals
No Max's

I: $0 < x < 2$, $x > 2$ $(2 < x < \infty)$

D: $x > -2$, $-2 < x < 0$
$(-\infty < x < -2)$

10) $y = x^3 - 3x^2 - 3$

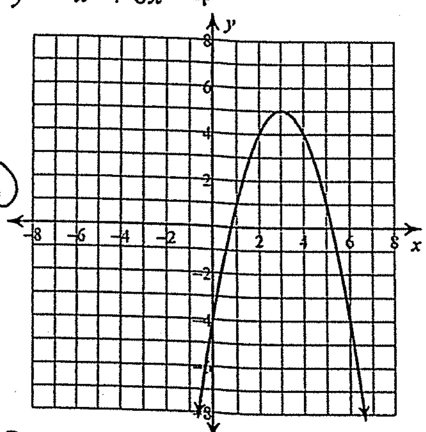


Local
Max.: (0, -3)
Min.: (2, -7)
No Globals

I: $x < 0$, $x > 2$

D: $0 < x < 2$

11) $y = -x^2 + 6x - 4$

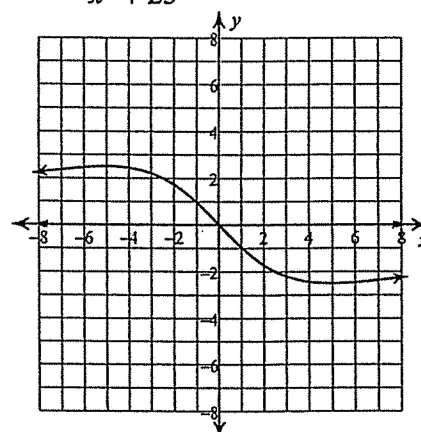


Global
Max.: (3, 5)
No Min.s

I: $x < 3$

D: $x > 3$

12) $y = -\dfrac{25x}{x^2 + 25}$



Global
Min.: (5, -2.5)
Max.: (-5, 2.5)

I: $x < -5$, $x > 5$

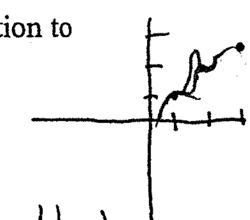
D: $-5 < x < 5$

Find the x-coordinates for all points of inflection

2) $y = x^3 - 2x^2 - 2$ (.75, -2.7)

3) $y = x^4 + x^3 - 3x^2 + 1$
(.55, .35)
(-.7, -.573)

14) Is it possible for a continuous function to have only the following extrema?
Relative max: (1, 1), (3, 3)
Relative min: (2, 2)
Explain why or why not.



No; the function can't be decreasing to the right of x=1 and ~~Dece~~ decreasing just left of x=2, yet jump from y=1 to y=2 w/ no periods of increase w/out being discontinuous.