Calculus CH. 3 Review

Name : _____

Find the extreme values of f on the given interval. Determine at which numbers in the interval they occur.

1) $f(x) = 3x^3 - 9x + 4 \; ; \; [-2, 3]$

Abs.max.value Abs.min.value Abs.max.occurs at Abs.min.occurs at

2) $f(x) = x^{2/5} + 3 \; ; \; [-32, 1]$

Abs.max.value Abs.min.value Abs.max.occurs at Abs.min.occurs at

3) $f(x) = 4x^5 - 5x^4$

rel.max.

rel.min.

inc.

dec.

inf .pts.

conc.up

conc.down

4) $g(x) = \dfrac{2x}{\sqrt{x-10}}$

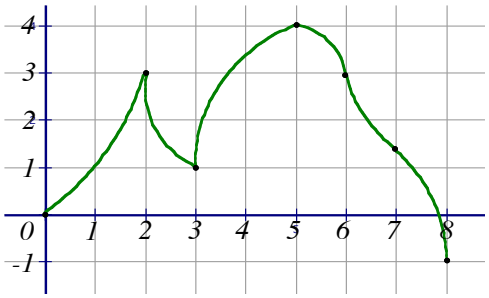
rel.max.

rel.min.

inc.

dec.

5) From $[0,8]$ tell me about the function. (Use graph to the right)



List the x - coordinates for each :

Inflection points _____

Relative maximum_____

Relative minimum_____

Hard points_____

Find each :

Abs. max. value_____

Abs. min. value_____

Abs. max. value occurs at_____

Abs. min. value occurs at_____

On which interval(s) is the graph:

increasing/concave up_____

increasing/concave down_____

decreasing/concave up_____

decreasing/concave down_____

6) $f''(x) = (x-2)^2(2x+7)$

Find the inflection points and concavity.

inf. pt. conc.up conc.down

$x =$

7) $f'(x) = \dfrac{x^2(2x+12)}{x-9}$ Find the relative extreme values and when the graph increases and decreases.

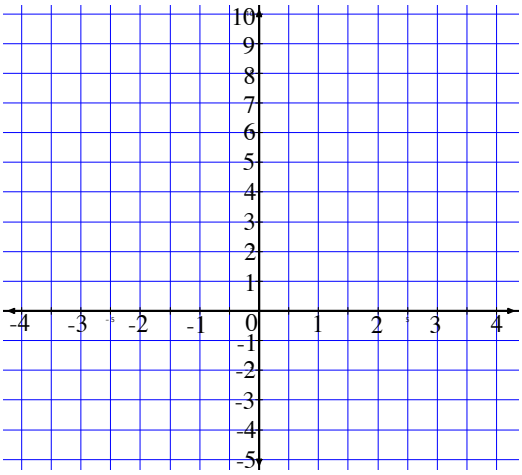
rel.max. rel.min. inc. dec.

$x =$ $x =$

Note all relevant properties of f and sketch the graph (Label the maximum, minimum and inflection points)

8) $f(x)=\dfrac{8x^2}{x^2+1}$

$x-$ int $y-$ int v.asym. h.asym. rel.max. rel.min. inc. dec. inf .pts. conc.up conc.down



9) A rectangle is bounded by the x-axis and the equation $y=\sqrt{72-x^2}$. What length and width should the rectangle be so that its area is a maximum? What is the area?

10) Given $f(x)=7x^2-2x$, find all numbers c in the interval $(1,5)$ where the Mean Value Theorem applies.

11) Given $f(x)=x^2-80$, and $x_1=10$. Use Newton's Method to find the third approximation x_3.

12) If $f'(x)>0$ and $f''(x)<0$ then the graph is_____

13) Draw a graph that is decreasing/concave up