

Homework Section 1.2 Day 2

Name Key
 Date _____ Hour _____

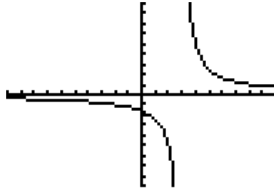
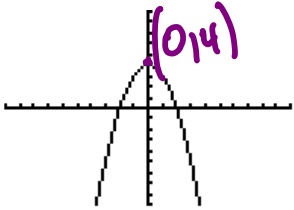
In exercises 1-6, identify either the _____ for the local extrema (Max/Min) of the function. Then identify the **range (R)** of the function using interval notation.

H.A.: none

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

2) $h(x) = \frac{5}{x-3}$

1. Max is 4 at $x = 0$
 $(-\infty, 4]$
R: _____

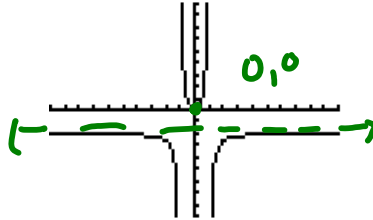
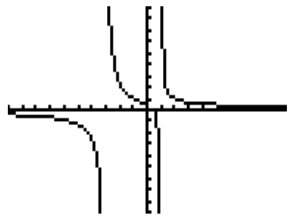


2. H.A.: $y = 0$
 $(-\infty, 0) \cup (0, \infty)$
R: _____

3) $f(x) = \frac{3x-1}{(x+3)(x-1)}$

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

3. H.A.: $y = 0$
 $(-\infty, \infty)$
R: _____

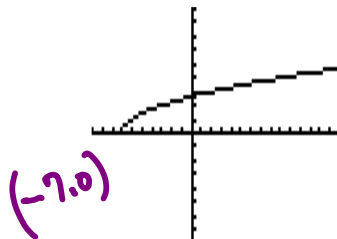
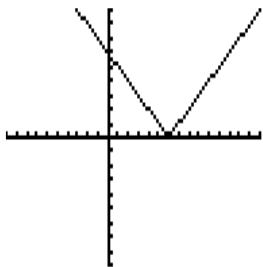


H.A.: $y = -2$
Local min is 0 at $x = 0$
 $(-\infty, -2) \cup [0, \infty)$
R: _____

5) $f(x) = |x - 6|$

6) $f(x) = \sqrt{x + 7}$

H.A.: none
Min: 0 at $x = 6$
 $[0, \infty)$
R: _____



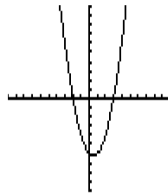
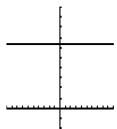
H.A.: none
Min: 0 at $x = -7$
 $[0, \infty)$
R: _____

In Exercises 7-10, determine whether the function is bounded above, bounded below, or bounded on its domain.

7) $y = 32$

8) $y = x^2 - x - 6$

7. bounded

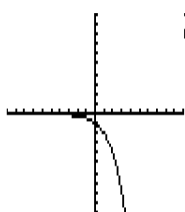
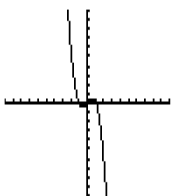


8. bounded below

9) $y = x - x^3$

10) $y = -2^x$

9. not bounded above or below



10. bounded above

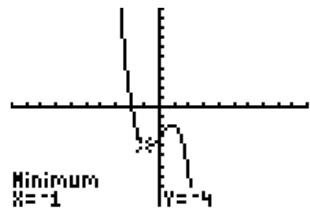
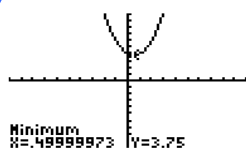
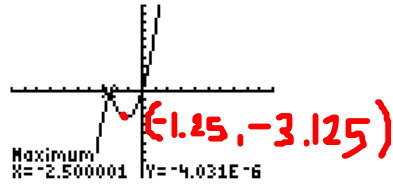
inspires $x = |2x + 5|$

In exercises 11-13, use a grapher to find all local maxima and minima and the values of x where they occur. Give values rounded to the nearest **hundredth**.

11) $f(x) = 4 - x + x^2$

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

13) $f(x) = x|2x + 5|$



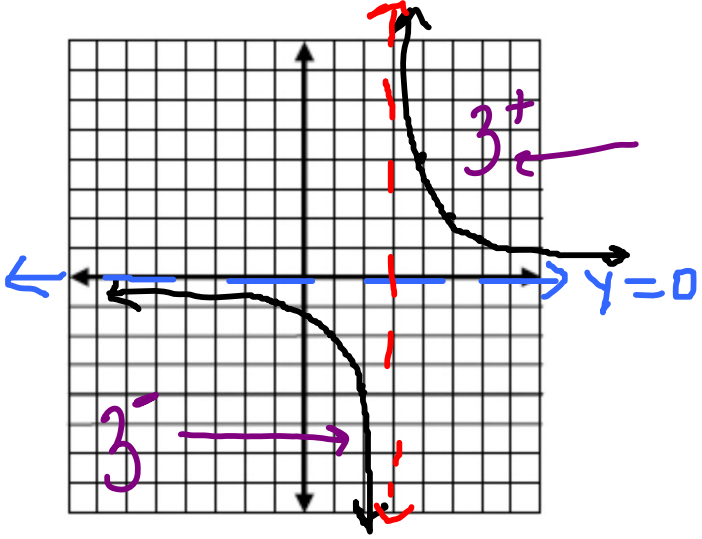
11. Min is 3.75 at $x = 0.5$

12. Local min is -4.09 at $x = -.82$
Local max is -1.91 at $x = .82$

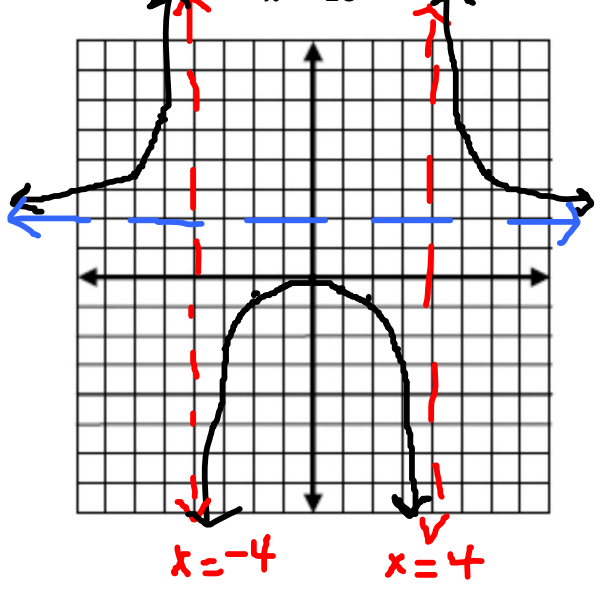
13. Local min is -3.13 at $x = -1.25$

In exercises 14-15, graph the function and any asymptotes. State the domain, range and asymptotes. Use limit statements ($\lim_{x \rightarrow \infty} f(x) = \dots$ or $\lim_{x \rightarrow -5^+} f(x) = \dots$) to describe the end behavior & the asymptotic behavior.

14) $f(x) = \frac{4}{x-3}$ *$x=3$*



15) $f(x) = \frac{2x^2}{x^2-16}$



X	Y1
3	-1.0E7
2	2.0
1	2.015
0	0
-1	2.015
-2	2.0
-3	-1.0E7

press + for $\Delta|b|$

X	Y1
1	2.015
2	2.0
3	-1.0E7
4	ERROR
5	5.0E9
6	1.0E5
7	9.9E33

$x=7$

Asymptotes:
 V.A. $x = 3$ H.A. $y = 0$

Asymptotes:
 V.A. $x = -4, x = 4$ H.A. $y = 2$

Domain: $(-\infty, 3) \cup (3, \infty)$ Range: $(-\infty, 0) \cup (0, \infty)$

Domain: $(-\infty, -4) \cup (-4, 4) \cup (4, \infty)$

End Behavior: $\lim_{x \rightarrow -\infty} f(x) = \square$ and $\lim_{x \rightarrow \infty} f(x) = \square$

Range: $(-\infty, 0] \cup (2, \infty)$

End Behavior: $\lim_{x \rightarrow -\infty} f(x) = \square$ and $\lim_{x \rightarrow \infty} f(x) = \square$

Asymptotic Behavior: $\lim_{x \rightarrow 3^-} f(x) = \square$ and $\lim_{x \rightarrow 3^+} f(x) = \square$

Asymptotic Behavior: $\lim_{x \rightarrow -4^-} f(x) = \square$ and $\lim_{x \rightarrow -4^+} f(x) = \square$

$\lim_{x \rightarrow 4^-} f(x) = \square$ and $\lim_{x \rightarrow 4^+} f(x) = \square$