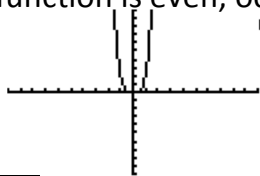


Homework 1.2 Day 3
Symmetry: Even/Odd,
Increasing & Decreasing Functions

Name Key
Date _____ Hour _____

State whether the function is even, odd or neither. Support graphically and confirm algebraically.

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



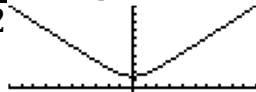
even

2) $g(x) = x^3$



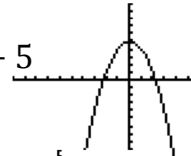
odd

3) $f(x) = \sqrt{x^2 + 2}$



even

4) $f(x) = -x^2 + 0.03x + 5$

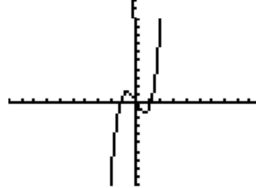


neither

X	Y1
-2	-4.09
-1	.94
0	3.97
1	5
2	4.03
3	1.06
4	-3.91

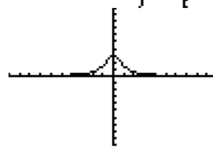
press + for Δtbl

5) $g(x) = 2x^3 - 3x$



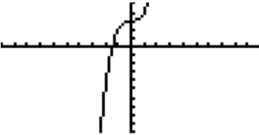
odd

6) $g(x) = \frac{3}{1+x^2}$



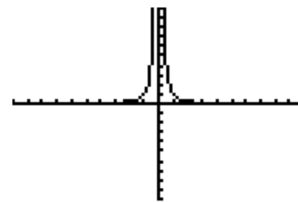
even

7) $f(x) = x^3 + 0.04x^2 + 3$



neither

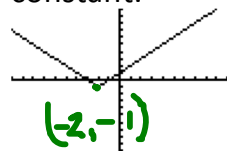
8) $h(x) = \frac{1}{x^2}$



even

Graph the function and identify intervals, using interval notation, on which the function is increasing, decreasing or constant.

9) $f(x) = |x + 2| - 1$

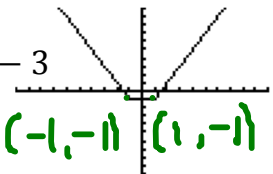


Increasing: $[-2, \infty)$

Decreasing: $(-\infty, -2]$

Constant: none

10) $f(x) = |x + 1| + |x - 1| - 3$

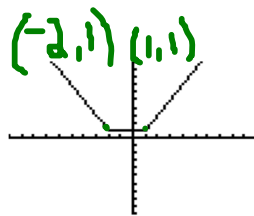


Increasing: $[1, \infty)$

Decreasing: $(-\infty, -1]$

Constant: $[-1, 1]$

11) $g(x) = |x + 2| + |x - 1| - 2$

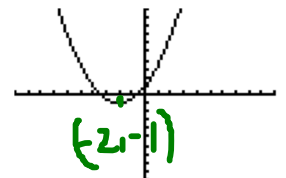


Increasing: $[1, \infty)$

Decreasing: $(-\infty, -2]$

Constant: $[-2, 1]$

12) $h(x) = .5(x + 2)^2 - 1$

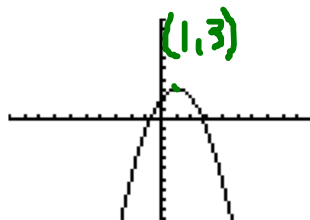


Increasing: $[-2, \infty)$

Decreasing: $(-\infty, -2]$

Constant: none

13) $g(x) = 3 - (x - 1)^2$

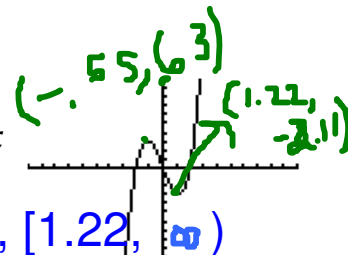


Increasing: $(-\infty, 1]$

Decreasing: $[1, \infty)$

Constant: none

14) $f(x) = x^3 - x^2 - 2x$



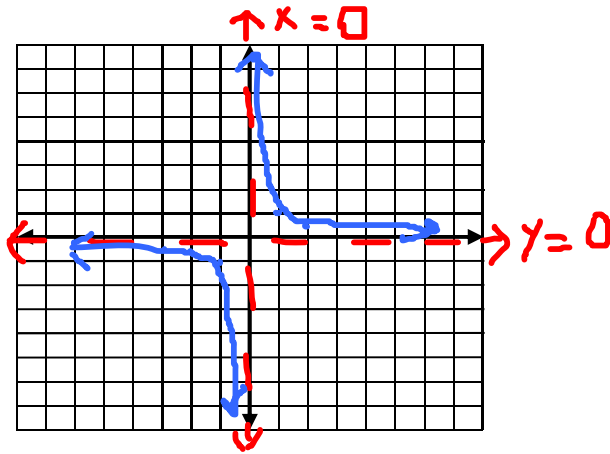
Increasing: $(-\infty, -0.55], [1.22, \infty)$

Decreasing: $[-0.55, 1.22]$

Constant: none

15)

a) Graph the function: $f(x) = \frac{1}{x}$



b) State the vertical and horizontal asymptotes, if applicable. If none, state "none". Place all asymptotes on the graph.

V.A.: $x = 0$

H.A.: $y = 0$

c) State the domain and range of the function.

D: $(-\infty, 0) \cup (0, \infty)$

R: $(-\infty, 0) \cup (0, \infty)$

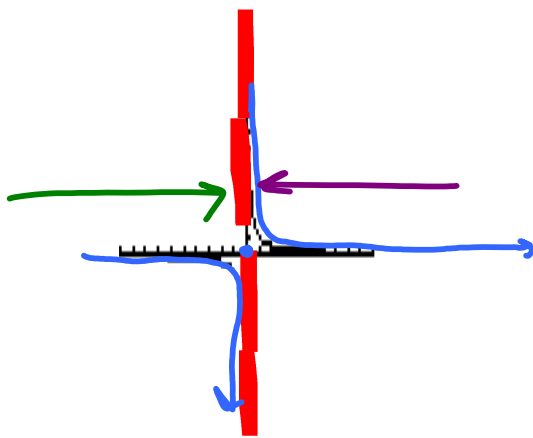
d) State the intervals of increasing or decreasing, if none, state none.

Increasing: none

Decreasing: $(-\infty, 0), (0, \infty)$

e) Describe the continuity (or discontinuity) of the function. e) infinite discontinuity

f) Determine whether the function is even, odd or neither. f) Odd



$$\lim_{x \rightarrow -\infty} f(x) = \frac{0}{\infty}$$

$$\lim_{x \rightarrow +\infty} f(x) = \frac{0}{\infty}$$

$$\lim_{x \rightarrow 0^-} f(x) = -\infty$$

$$\lim_{x \rightarrow 0^+} f(x) = +\infty$$