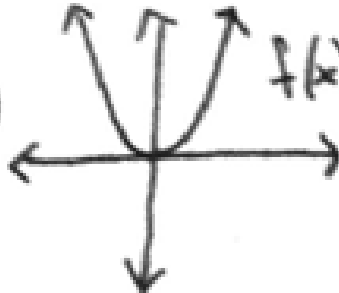


Take Out Your Homework


p.96 #4, 9-16, (18-24 even)

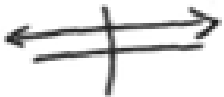
Homework Questions?


p.96 #4, 9-16, 18-24 even.

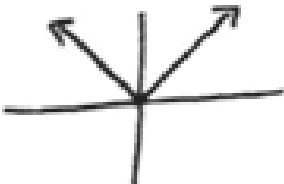
4)  $f(x) = x^2$ is decreasing ^{on} ~~the~~ the interval $(-\infty, 0)$.

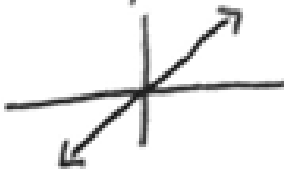
Homework Questions?

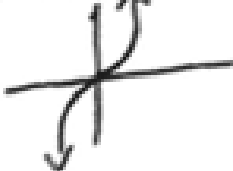
9) C. square function


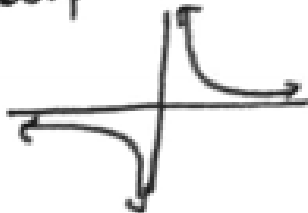
10) A. Constant function



11) E. square root function.


12) G. Absolute Value function


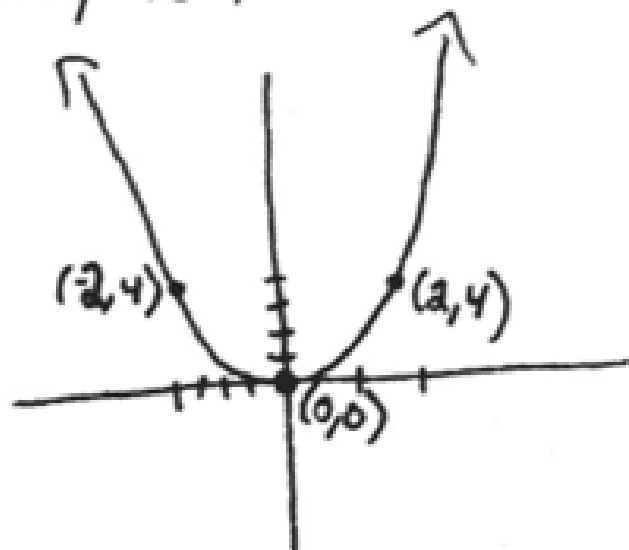
13) B. Identity function


14) D. Cube function


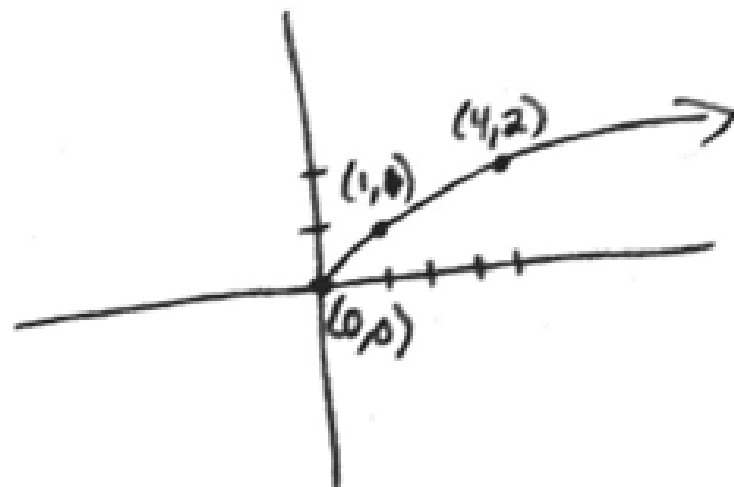
15) F. Reciprocal function


16) H. Cube root function


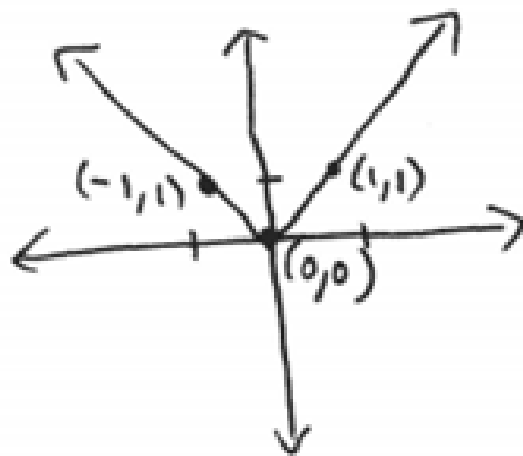
$$18) f(x) = x^2$$



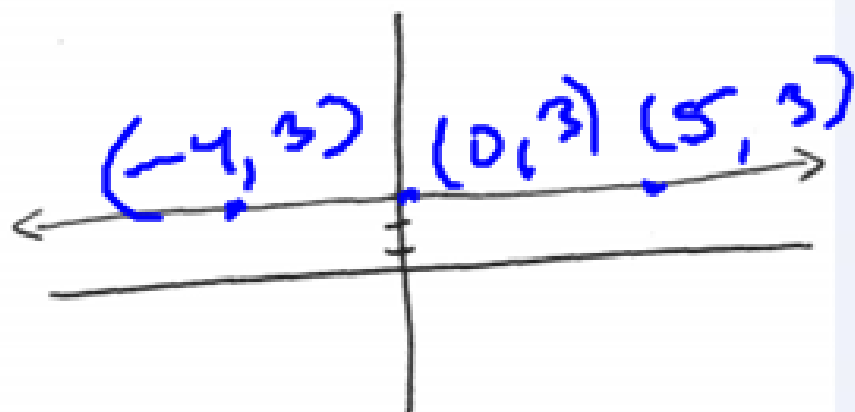
$$20) f(x) = \sqrt{x}$$



$$22) f(x) = |x|$$

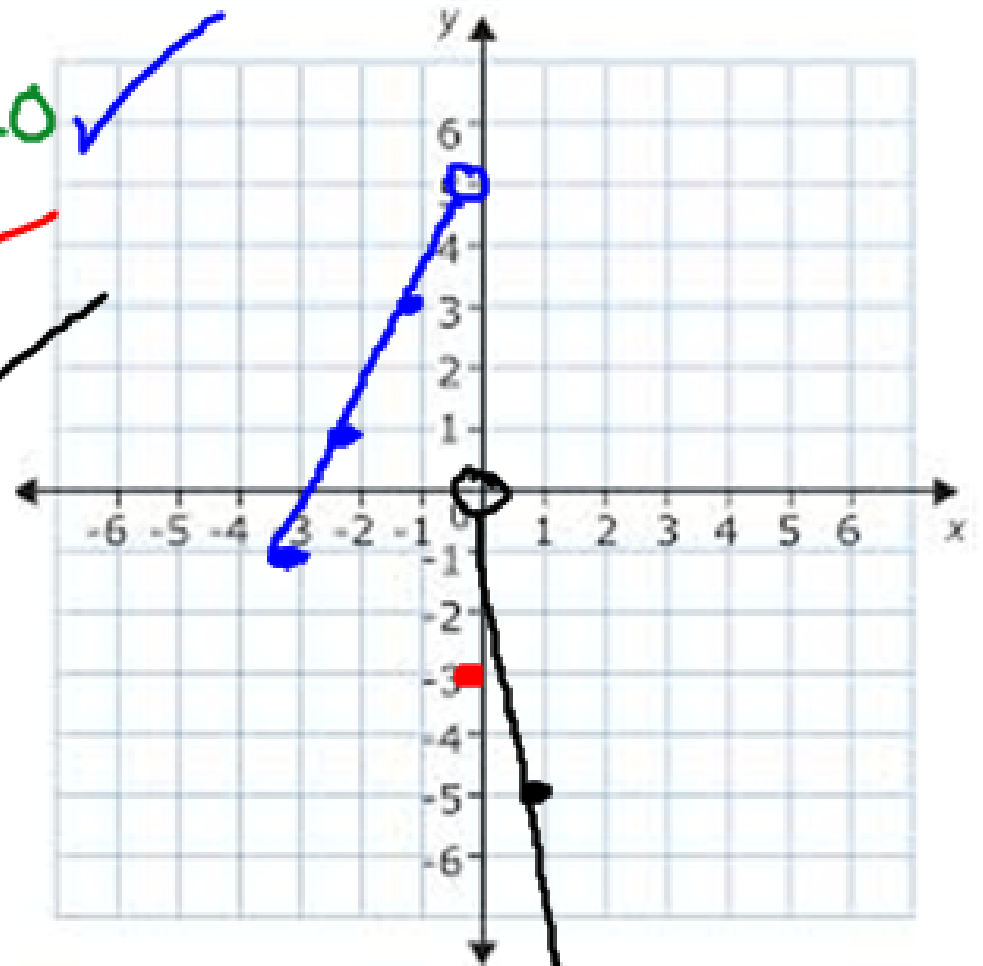


$$24) f(x) = 3$$



34)

$$f(x) = \begin{cases} 2x+5 & -3 \leq x < 0 \\ -3 & x = 0 \\ -5x & x > 0 \end{cases}$$



a) $\{x \mid [-3, \infty)\}$

b) $x = -2.5, 0$
 $y = 0, 5$

d) $\{y \mid (-\infty, 5)\}$

e) no

SECTIONS 2.4

LIBRARY OF FUNCTIONS: PIECEWISE-DEFINED FUNCTIONS REVIEW

Example...

Graphing Piecewise Defined Functions...

The function f is defined as $f(x) = \begin{cases} x + 3 & \text{if } -2 \leq x < 1 \\ 5 & \text{if } x = 1 \\ -x + 2 & \text{if } x > 1 \end{cases}$

(a) Find $f(0)$, $f(1)$, & $f(2)$

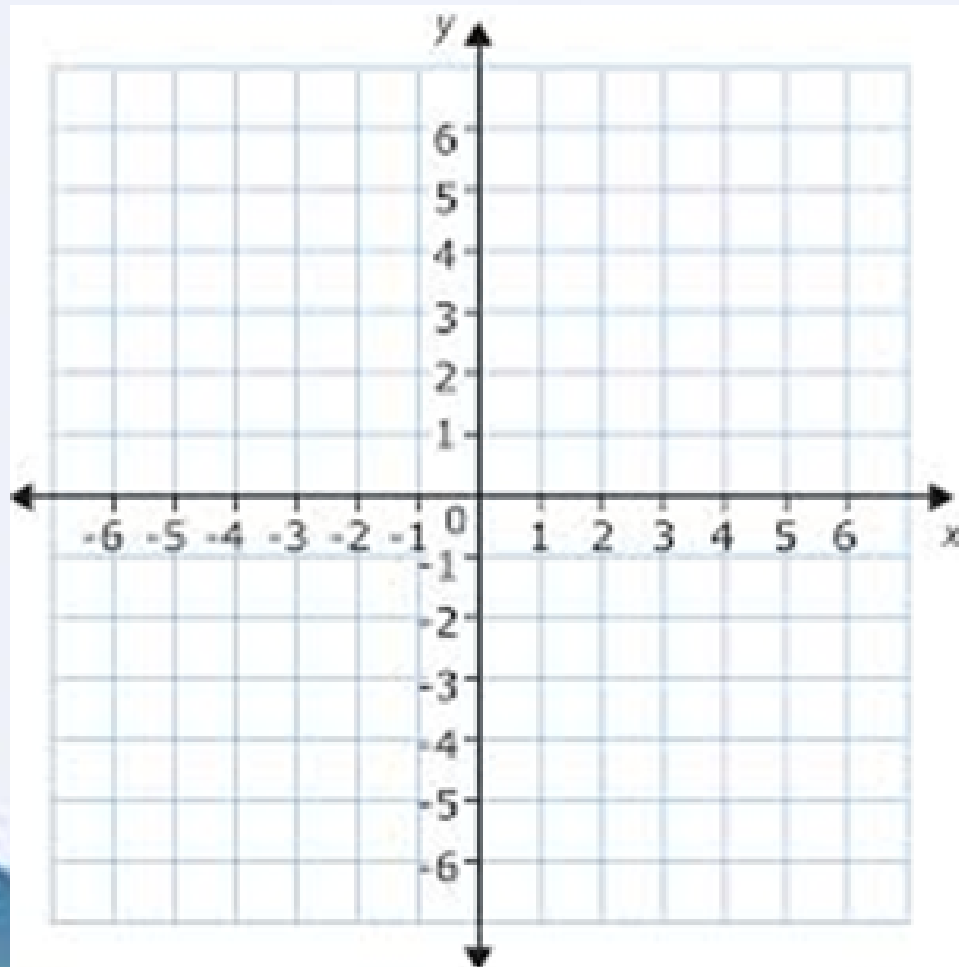
Graphing Piecewise Defined Functions...

Example...

The function f is defined as

$$f(x) = \begin{cases} x + 3 & \text{if } -2 \leq x < 1 \\ 5 & \text{if } x = 1 \\ -x + 2 & \text{if } x > 1 \end{cases}$$

(c) Graph f .



(d) Use the graph to find the range of f .

(e) Is f continuous in its domain?

Review Sheet

Pre-Calc Review Sheet.

~~2.3 & 2.4~~ 2.3 & 2.4 WS

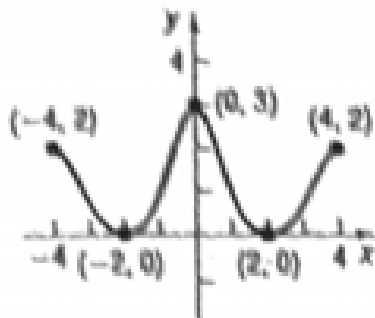
Name: _____

Date: _____

In problems 1 & 2, the graph of a function is given. Use the graph to find:

- The intercepts, if any
- The domain and range
- The intervals on which it is increasing, decreasing or constant
- Whether it is even, odd, or neither

1.



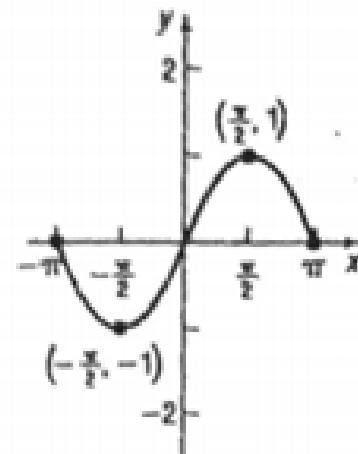
a. $x = -2, 2$ $y = 3$

b. $\{x | [-4, 4]\}$ $\{y | [0, 4]\}$

c. $\downarrow (-4, 2) (0, 2)$ $\uparrow (-2, 0) (2, 0)$

d. EVEN

2.



a. $x = -\pi, 0, \pi$ $y = 0$

b. $\{x | [-\pi, \pi]\}$ $\{y | [-1, 1]\}$

c. $\downarrow (-\pi, \frac{\pi}{2}) (\frac{\pi}{2}, \pi)$ \uparrow

d. ODD $(-\frac{\pi}{2}, \frac{\pi}{2})$

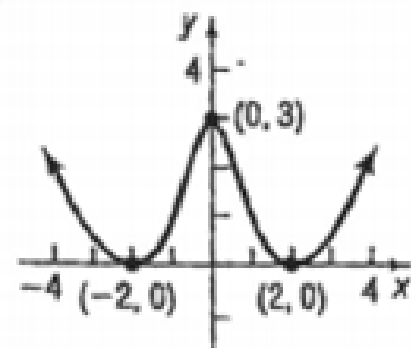
3. Use the graph to find;

a. The values, if any at which f has a local maximum.

$$x=0, f(0)=3$$

b. The values, if any, at which f has a local minimum.

$$x=-2, 2 \quad f(-2)=0, f(2)=0$$



In problems 4-6, determine algebraically whether each function is even, odd, or neither.

4. $f(x) = 4x^3 + x$

$$\begin{aligned} f(-x) &= 4(-x)^3 + (-x) \\ &= -4x^3 - x \checkmark \end{aligned}$$

$$-(4x^3 + x)$$

$$= -4x^3 - x \checkmark$$

odd

5. $g(x) = \frac{1}{x^2}$ ✓

$$\begin{aligned} g(-x) &= \frac{1}{(-x)^2} \\ &= \frac{1}{x^2} \checkmark \end{aligned}$$

even

6. $h(x) = -3x^2 - 5$ ✓

$$\begin{aligned} h(-x) &= -3(-x)^2 - 5 \\ &= -3x^2 - 5 \checkmark \end{aligned}$$

even

Not on Test

7. Use a graphing utility to graph the function over the indicated interval. $f(x) = -0.4x^4 - 0.5x^3 + 0.8x^2 - 2$ ~~interval~~ $(-10, 10)$

a. Approximate any local maxima and local minima

~~b. Give the increasing and decreasing intervals~~

← is on test

Steps: ① graph in calculator

② hit 2nd trace min or max

③ pick a Pt a little to left of min/max, a lil to right $\frac{1}{2}$ then middle

8. $h(x) = x^2 - 2x$

a. Find the average rate of change from 2 to 4.

$$\frac{h(b) - h(a)}{b - a} = \frac{h(4) - h(2)}{4 - 2} = \frac{8 - 0}{2} = \frac{8}{2} = 4$$

b. Find an equation of the secant line containing $(2, h(2))$ and $(4, h(4))$.

$$y = mx + b$$

$$h(2) = 4(2) + b$$

$$0 = 8 + b$$

$$b = -8$$

$$y = 4x - 8$$

double negative.

$$9. f(x) = \begin{cases} 2x+5 & \text{if } -3 \leq x < 0 \\ -3 & \text{if } -x = 0 \\ -5x & \text{if } -x > 0 \end{cases}$$

a. Find the Domain.

$$\{x \mid [-3, \infty)\}$$

b. Locate any intercepts.

$$x = -2.5 \quad y = -3$$

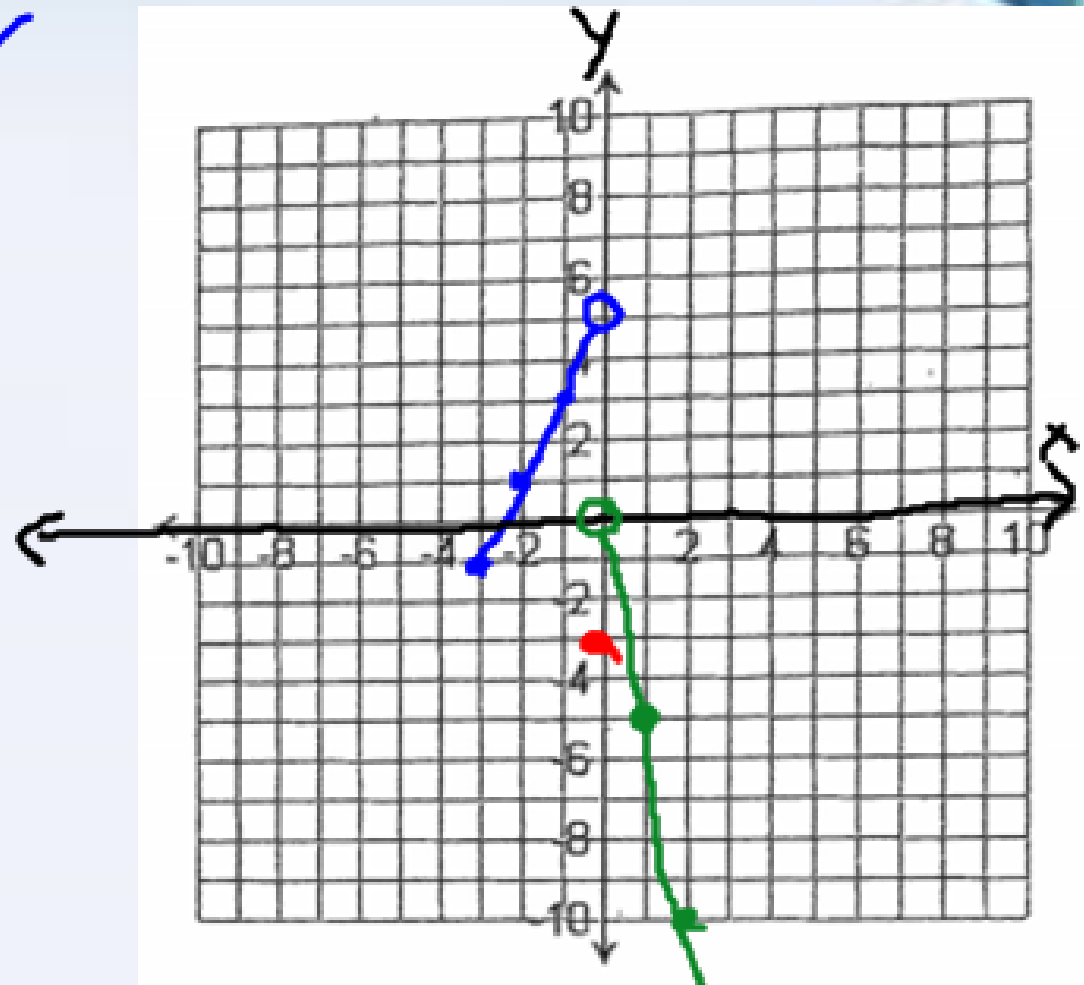
c. Graph the function

d. Find the range.

$$\{y \mid (5, -\infty)\}$$

e. Is f continuous on its domain?

No.



b/c only the closed circles count.