

2.2: Graphs of Functions

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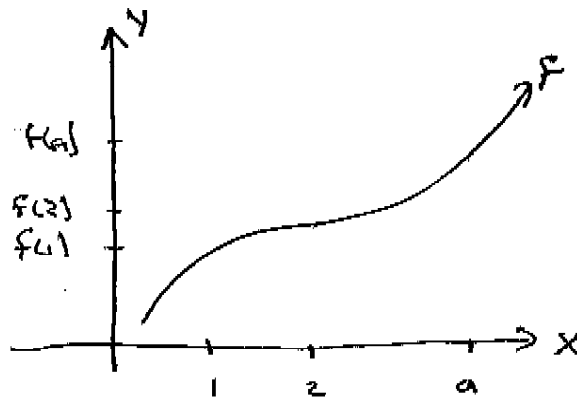
In addition to the previously shown symbolic and literal representations, ~~graphs~~ ^{functions} can be ~~given~~ represented graphically.

The Graph: If f is a fct w/ domain A , then its graph is the set of all ordered pairs s.t.

$$\{(x, f(x)) \mid x \in A\}.$$

That is, if $y = f(x)$, then the graph of f is all the pts (x, y) that satisfy the eqn.

Graphically:



Familiar Graphs.

- a) f is constant
- b) g is linear

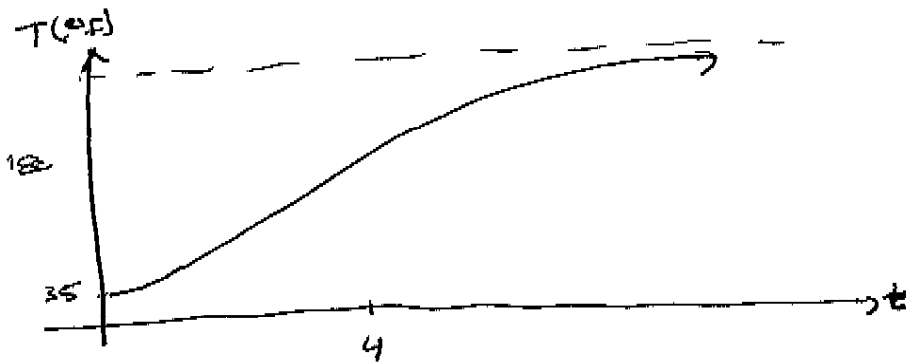
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ex1: Family of roots.

Plot $f(x) = x^{1/n}$ for even & odd $n \in \mathbb{Z}^+$
 what conclusions can you draw.

ex2: reading graphs

The internal temp (°F) of a turkey is shown t hrs after it is placed in the oven.



Analyze the graph.

ex3: Arbitrary Graph Handout. (attached)

ex4: Use the calculator to find the domain of $f(x) = \sqrt{2 - x - x^2}$. Estimate the range (that is, you do not need to prove you have found the max).

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Ex 5: Graphing Piecewise Defined Functions

$$a) f(x) = \begin{cases} x+1, & x \leq 2 \\ -x+2, & x > 2 \end{cases}$$

$$b) g(x) = \begin{cases} -x^2, & -2 < x \leq 1 \\ 2-x, & x > 1 \end{cases}$$

Show the piecewise definition of ABS.

The greatest integer fct (floor fct).

The vertical line test (AR6H - assumes $f: \mathbb{R} \rightarrow \mathbb{R}$)

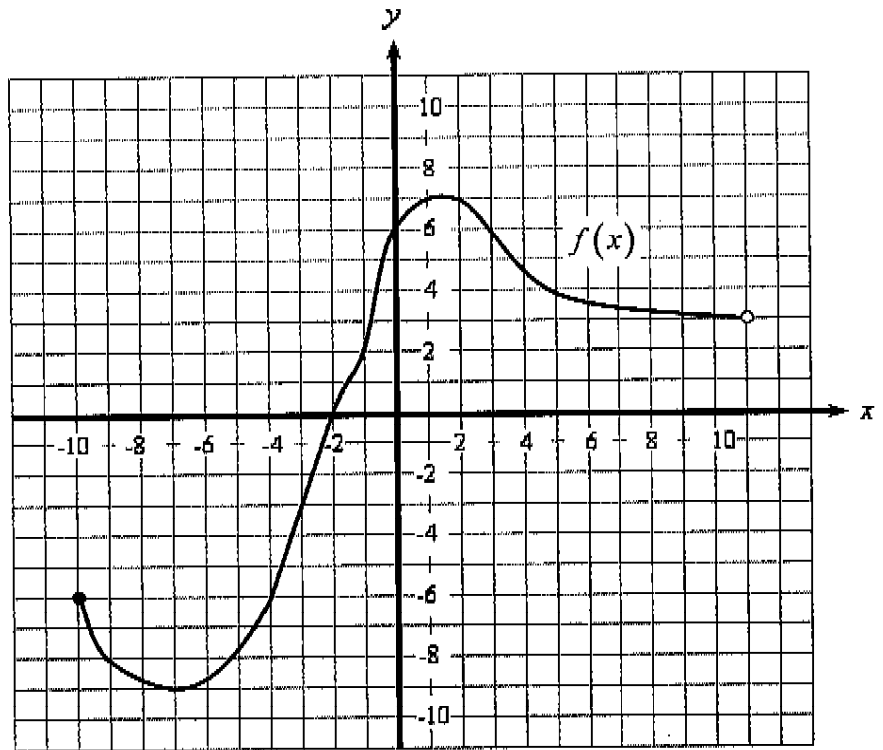
Ex 6: Equations that define fcts.

$$a) x = y^2$$

$$b) 2x + |y| = 0$$

Math 115: Pre Calculus I
Handout: Arbitrary Function 1

Consider the complete graph of $f(x)$ that is given.



Use the graph to answer the following questions.

- | | |
|---|---|
| a.) $f(-10) =$ _____ | b.) $f(-7) =$ _____ |
| c.) $f(-2) =$ _____ | d.) $f(0) =$ _____ |
| e.) $f(3) =$ _____ | f.) $f(11) =$ _____ |
| g.) The domain of $f(x)$: _____ | h.) The range of $f(x)$: _____ |
| i.) $f(x) = -3$ when _____ | j.) $f(x) = 2$ when _____ |
| k.) $f(x) = -6$ when _____ | l.) $f(x) = 6$ when _____ |
| m.) $f(x) = 9$ when _____ | n.) $f(-7) + f(-1) =$ _____ |
| o.) The max of $f(x)$ is when $x =$ _____ | p.) The min of $f(x)$ is when $x =$ _____ |
| q.) $f(f(-1)) =$ _____ | r.) $f(f(-7)) =$ _____ |