

Panel 1

Welcome to Math 1303



Abducted by an alien circus company, Professor Doyle is forced to write calculus equations in center ring.

Quantitative Methods  
for Business

or

Business Calculus  
Bert  
Wachsmuth

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Panel 2

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Science Hall 118 D

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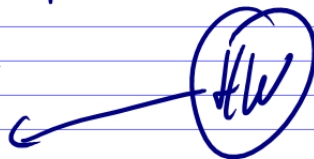
Email: wachsmute@shu.edu

Hours: MW 10-11, by appointment

Web: <http://pirate.shu.edu/~wachsmut/>

Textbook.

DyKnow



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Panel 3

Grading

Quizzes every week: 125 p ←  
 3 exams: 300  
 1 final: 250  
 Computer assignments: 125

About the final:

- cumulative + difficult
- 2 parts (computer + by hand)
- counts a lot
- departmental final

worry but  
not too much!

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Panel 4

What is covered in Business Calc

① Suppose it costs \$500 to produce  $x$  widgets with fixed costs of \$1,250. Assuming a marginal revenue of \$750 per unit, how much to produce to max. profit.

② To purchase a home you borrow \$200,000 from the bank at 5% interest fixed over 30 years.

What is your monthly payment and how much did the bank collect.

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Panel 5

What is covered in Business Calc?

Review	2	Functions and Graphs
	3	Lines, Parabolas and Systems
	4	Exponential and Logarithmic Functions
and	5	Mathematics of Finance
	10	Limits and Continuity
Calc	11	Differentiation
	12	Additional Differentiation Topics
	13	Curve Sketching
	14	Integration
	<del>6</del>	<del>Matrix Algebra</del>

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Panel 6

About DyKnow

Downloaded by now - install

Dyknow Server Address:

Your username:

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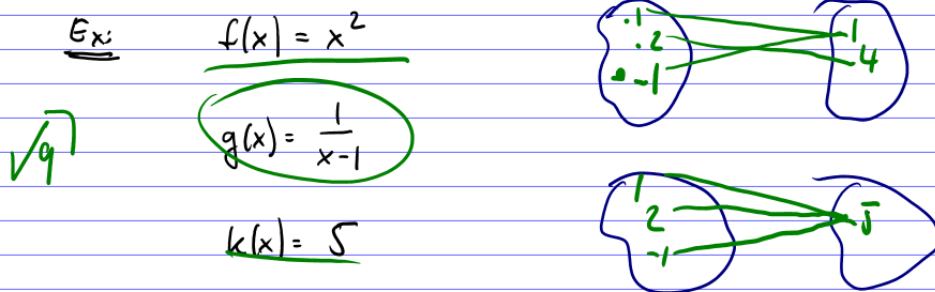
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Panel 7

Functions

Def: A function is a rule that assigns to each  $x$  in a set  $A$  exactly one element  $y$ , or  $f(x)$ , from a set  $B$ .

Note: The set  $A$  is called: domain  
The set  $B$  is called: range



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Panel 8

Representing a function

4 different ways:

verbally  
numerically  
geometrically (graphs)  
algebraically

Ex:  $f(x) = \sqrt{x+2}$

domain: all #'s bigger or equal to

-2

$x \geq -2$



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

domain: all #'s but 0, 1

$(-\infty, 0) \cup (0, 1) \cup (1, \infty)$ ,  $x \neq 1$  or  $0$

Problem:  $x^2 - x = 0$

$x(x-1) = 0$

$x = 1, 0$

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Panel 9

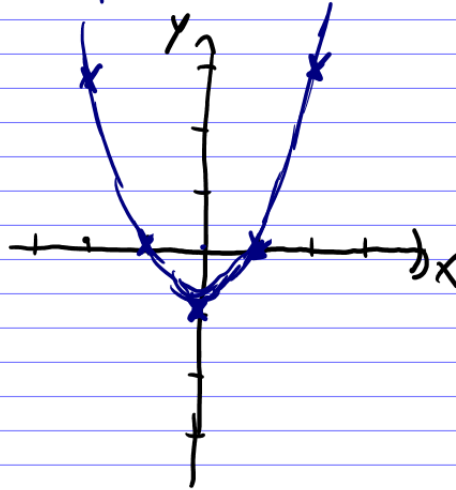
Graph of a function

The graph of a function  $y = f(x)$  is the collection of ordered pairs  $(x, y)$ , where  $y = f(x)$ , drawn in a Cartesian coordinate system. Descartes

Ex:

x	y
-2	3
-1	0
0	-1
1	0
2	3

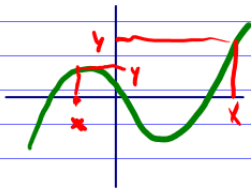
$$f(x) = x^2 - 1$$



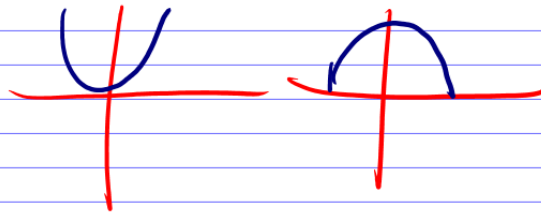
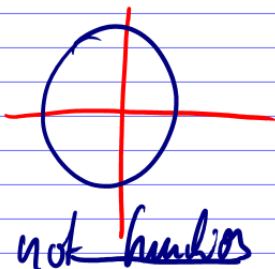
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Panel 10

Not every graph represents a function:



Vertical Line Test: if a vertical line intersects graph more than once  $\Rightarrow$  not a function



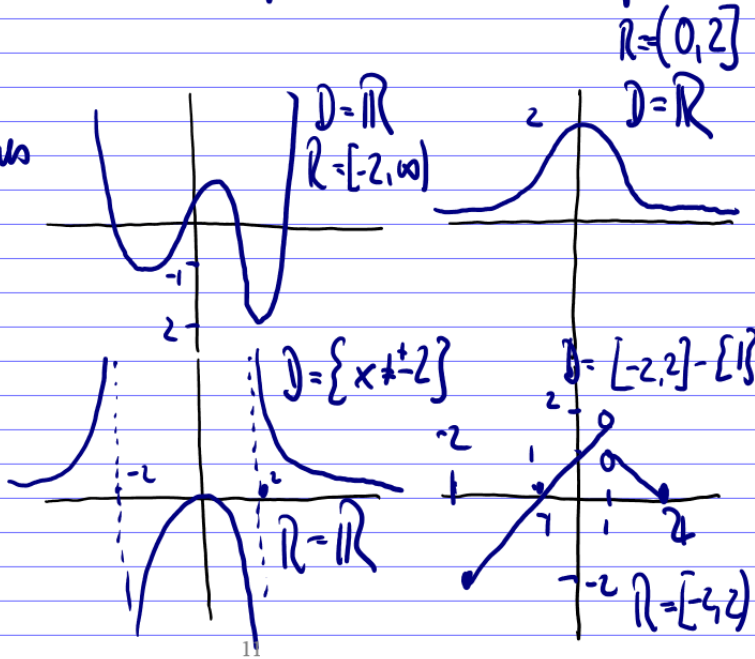
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Panel 11

Domain / Range Graphically:

Domain: all x-values you are allowed to plug in

Range: All y-values that have a corresponding x-value.



Panel 12

Piecewise defined functions:

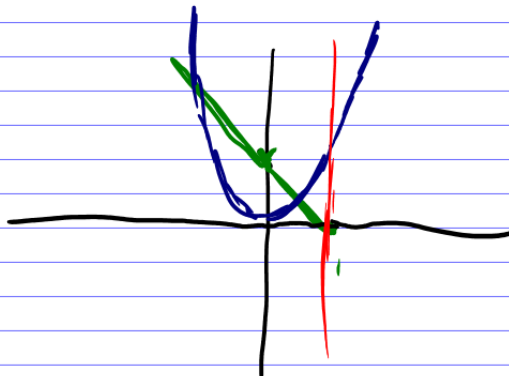
$$f(x) = \begin{cases} 1-x & \text{if } x \leq 1 \\ x^2 & \text{if } x > 1 \end{cases}$$

$f(0) = 1$

$f(1) = 0$

$f(2) = 4$

Graph:



$f(x) = 1-x$  has y-int. 1 and slope -1