


Panel 1

Welcome to Math 1303



Quantitative Methods
for Business

or

Business Calculus

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

Panel 2

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HW #1: Download + install DgKnow

HW #2: Get the text book!

Panel 3

Grading

Quizzes every week: 125 points
 3 exams: 300 points
 1 final: 250 points
 Computer assignments: 125 points
 100 points

About the final:

- cumulative + difficult
- computer portion + regular portion
- counts a lot
- dept. final

Be Prepared + Ask Questions

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Panel 4

What is covered in Business Calc ← 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 sell in order to maximize profit (minimize cost)

← business math

② To purchase a home you borrow \$200,000 from the bank at 4.0% interest fixed over 30 years. How much to pay each month, and how much do you pay the bank after 30 years? (\$350,000)

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Panel 5

What is covered in Business Calc ?

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

} Review

} Now

Calculus

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Panel 6

About DyKnow


Downloaded by now - install

Dyknow Server Address:

dyknow: //vision.dyknow.com/shu.edu

Your username: username (9 letters)

Your password: username



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Functions

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

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

Ex: $f(x) = x^2$

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

$h(x) = 5$ being

Panel 8

Representing a function

4 different ways:

- verbally
- numerically
- algebraically
- geometrically

Ex: Domain of $f(x) = x^2 + 1$ $D = \text{all numbers, } \mathbb{R}, (-\infty, \infty)$

$g(x) = \frac{1}{x^2 - 1}$ $D = \mathbb{R}$ all \mathbb{R} 's but 0 and 1

$h(x) = \frac{1}{x^2 - x}$ trouble if: $x^2 - x = 0$ $D = \mathbb{R} - [0, 1]$
 $x(x-1) = 0$ all $x \neq 0, 1$

$h(x) = \sqrt{x+2}$ constraint: $x+2 \geq 0 \Leftrightarrow D = [x \geq -2]$

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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.

Ex: Sketch $f(x) = x^2 - 1$

x	f(x)
-2	3
-1	0
0	-1
1	0
2	3

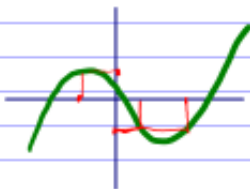


domain: \mathbb{R}

range: $[y \geq -1]$

Panel 10

Not every graph represents a function:



if and only if

Vertical Line Test: A graph represents a function iff

no vertical line intersects graph more than once.



Panel 11

Domain / Range Graphically:

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

Range: all y-values

Read vertically from an x value (on the y-axis)

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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

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