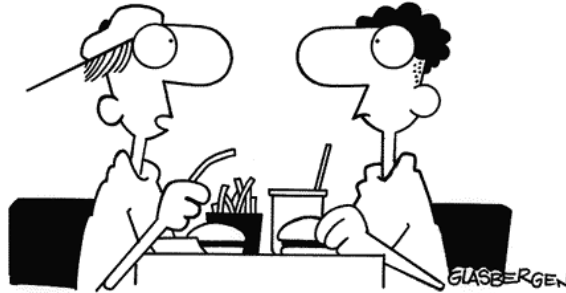




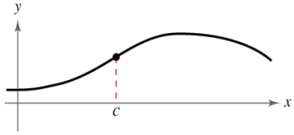
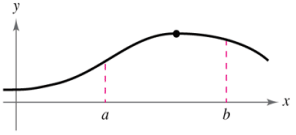
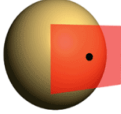

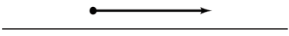

Calculus
Lesson 1.1: A Preview of Calculus
Mrs. Snow, Instructor



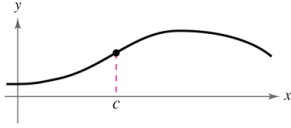
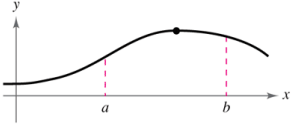
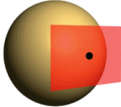
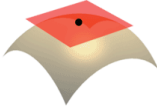
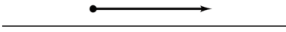





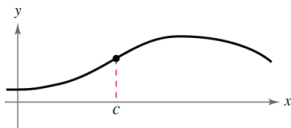
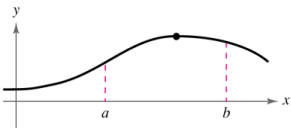
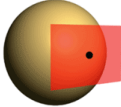
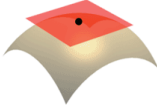
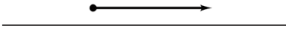

**“I forgot to make a back-up copy of my brain,
so everything I learned last semester was lost.”**




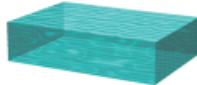


So, what is Calculus???

Calculus is the mathematics of change—velocities and accelerations. Calculus is also the mathematics of tangent lines, slopes, areas, volumes, arc lengths, centroids, curvatures, and a variety of other concepts that have enabled scientists, engineers, and economists to model real-life situations.

Without Calculus	With Differential Calculus
Curvature of a circle 	Curvature of a curve 
Height of a curve when $x = c$ 	Maximum height of a curve on an interval 
Tangent plane to a sphere 	Tangent plane to a surface 
Direction of motion along a line 	Direction of motion along a curve 

Without Calculus	With Differential Calculus
Curvature of a circle 	Curvature of a curve 
Height of a curve when $x = c$ 	Maximum height of a curve on an interval 
Tangent plane to a sphere 	Tangent plane to a surface 
Direction of motion along a line 	Direction of motion along a curve 

Without Calculus	With Differential Calculus
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Direction of motion along a line 	Direction of motion along a curve 

	Without Calculus		With Integral Calculus
Surface area of a cylinder		Surface area of a solid of revolution	
Mass of a solid of constant density		Mass of a solid of variable density	
Volume of a rectangular solid		Volume of a region under a surface	
Sum of a finite number of terms	$a_1 + a_2 + \cdots + a_n = S$	Sum of an infinite number of terms	$a_1 + a_2 + a_3 + \cdots = S$