Math 141 - Calculus Section 5.1 Video Worksheet

Area and Estimating with Finite Sums

Displacement

The integral has many applications in statistics, economics, science and engineering.

Integration –

Upper Sum –	Lower Sum –
Midpoint Rule –	
Left Endpoint Area –	Right Endpoint Area –

Total Distance traveled

Average Value –

Ex.) $f(x) = x^3$

Ex.)
$$f(x) = 4 - x^2$$

between x = -2 and x = 2 midpoint 2 rectangles

4 rectangles

Ex.)	Time	Velocity	Distance traveled upstream
	0	1.0	Left Endpoint
-	5	1.2	
	10	1.7	
	15	2.0	
	20	1.8	
	25	1.6	
	30	1.4	Right Endpoint
	35	1.2	
	40	1.0	
	45	1.8	
	50	1.5	
	55	1.2	
	60	0.0	

Average Value of $f(x) = \frac{1}{x}$ on [1,9] using 4 subintervals evaluated at midpoints

Area of Triangle

Inscribe a regular 8 – sided polygon inside a circle of radius 1. Compute the area.

16-sided polygon