(28) $25000 - 2363 - 720x = 0$

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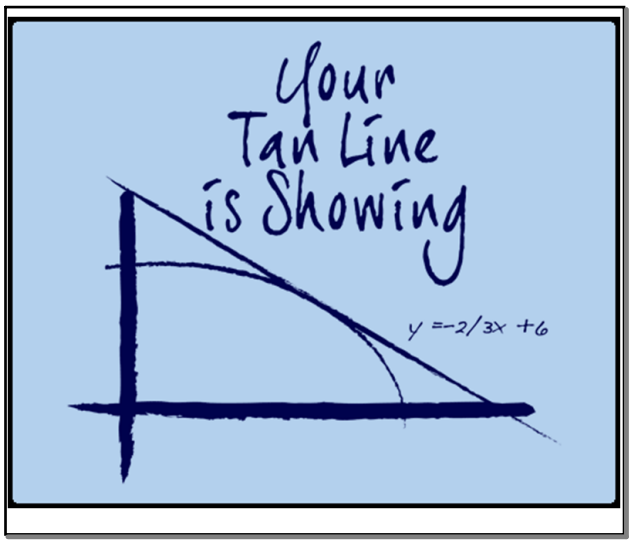

Dec 5-12:01 PM

5-2 Definite Integrals

Learning Objectives:

I understand how the Rectangle Approximation Method, when taken to the limit, yields a definite integral.

I can find the value of a definite integral by using Geometry.

I can evaluate a definite integral using the graphing calculator.

I understand the terminology and notation associated with integration.

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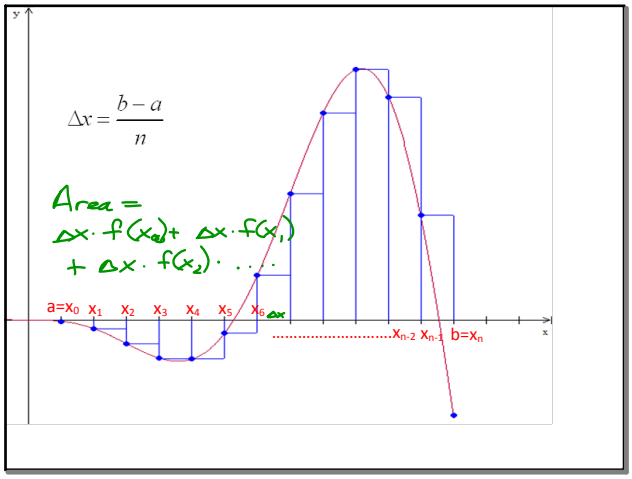

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$$Area = f(x_0)\cdot\Delta x + f(x_1)\cdot\Delta x + f(x_2)\cdot\Delta x + \ldots$$
$$\ldots + f(x_{n-2})\cdot\Delta x + f(x_{n-1})\cdot\Delta x$$

$$= \sum_{k=0}^{n-1} f(x_k)\cdot\Delta x$$

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$$I = \lim_{n\to\infty} \sum_{k=0}^{n-1} f(x_k)\cdot\Delta x$$

I = Actual area between the curve and the x-axis.

integral

$$\lim_{n\to\infty} \sum_{k=0}^{n-1} f(x_k)\cdot\Delta x = \int_a^b f(x)dx$$

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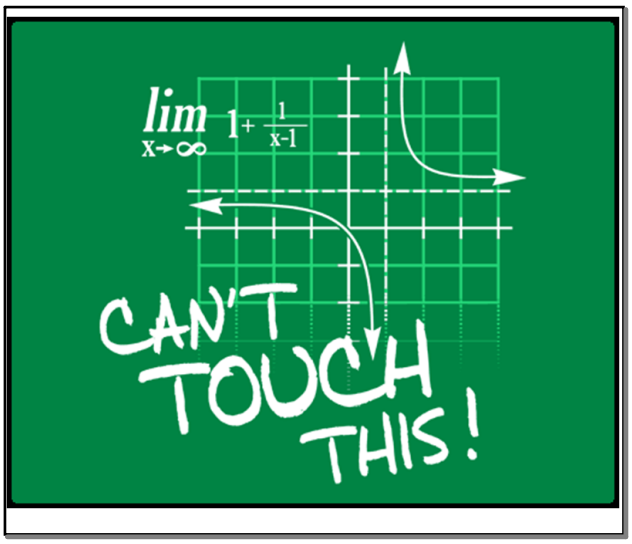

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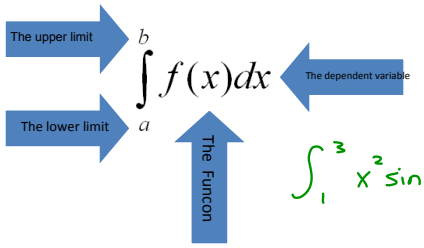

"The integral from a to b of f(x)"

The integral finds the area under the curve.

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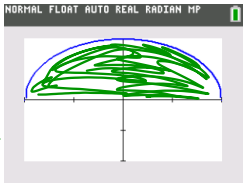
Ex1. Evaluate the integral using areas

1.) $\int_{-2}^{2} \sqrt{4-x^2}\,dx$

$\frac{1}{2}\pi r^2 = \frac{1}{2}\pi(2)^2$

$= 2\pi$



2.) $\int_{-2}^{2} -\sqrt{4-x^2}\,dx$ $= -2\pi$

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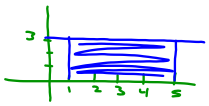
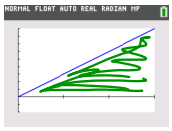
3.) $\int_1^5 3dx$

$f(x) = 3$



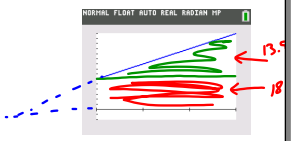
$A = lw$
$= 4 \cdot 3 =$
12

4.) $\int_0^3 3x dx$



$A = \frac{1}{2}bh$
$\frac{1}{2}(3)9$
$= 13.5 \text{ units}^2$

5.) $\int_2^5 3x dx$ $= 31.5 \text{ units}^2$



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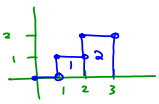
6.) $\int_0^3 [\![x]\!]\,dx$



3

7.) $\int_0^{\pi} \sin x\,dx$

2

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Ex2. Work in groups to do

Exploration #1 on page 279

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Homework

Pg 282 # 7-19 odd (no GC)

33-40 (with GC)

41-44, 46

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