Calc AB

Lesson 59

10/26/15

Agenda: 10/26/15

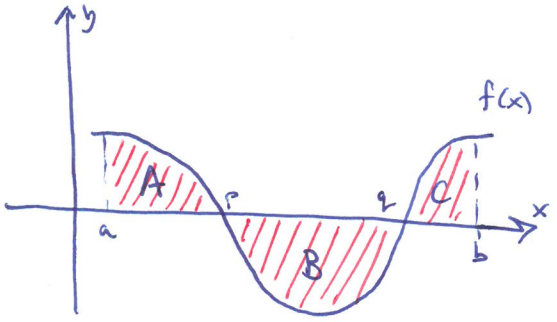
HW leader

lesson 59

Computing Areas

With a graphing Calc

* Quiz back after lesson

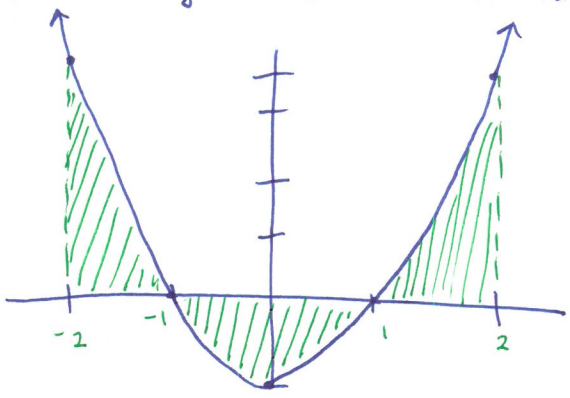


$$\int_a^b f(x)\,dx = A + C - B \neq \text{Total Area}$$

$$\text{Total Area} = A + B + C$$

$$= \int_a^p f(x)\,dx - \int_p^q f(x)\,dx + \int_q^b f(x)\,dx$$

E 59.2 Find the area of the region bounded by the graph of $y = x^2 - 1$ and the x-axis over the interval $[-2, 2]$



$$\text{Total Area} = \int_{-2}^{-1}(x^2-1)\,dx - \int_{-1}^{1}(x^2-1)\,dx + \int_{1}^{2}(x^2-1)\,dx$$

$$= \left(\frac{x^3}{3} - x\right)\Big|_{-2}^{-1} - \left(\frac{x^3}{3} - x\right)\Big|_{-1}^{1} + \left(\frac{x^3}{3} - x\right)\Big|_{1}^{2}$$

$$= \left(\frac{(-1)^3}{3} + 1\right) - \left(\frac{(-2)^3}{3} + 2\right) - \left(\frac{1}{3} - 1\right) + \left(\frac{(-1)^3}{3} + 1\right) + \left(\frac{2^3}{3} - 2\right) - \left(\frac{1}{3} - 1\right)$$

$$= \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \frac{12}{3} = \boxed{4 \text{ units}^2}$$

On your Graphing Calculator:

$$\text{fnInt}(x^2-1, x, -2, 2) = 1.\overline{33}$$

$$\text{fnInt}((x^2-1), x, -2, -1) - \text{fnInt}(x^2-1, x, -1, 1) + \text{fnInt}(x^2-1, x, 1, 2) = 4$$

Calc AB | Trimester Final | 10/26/15

★ Counts as Two Tests for Trimester 1

★ Make your own Study Guide based on this

Part 1

- 13 multiple choice questions (1.2 points each AP style) (upto lesson 50)
- 1 free response on Limits Definition of Continuity. (9 points)

Part 2 Justifications

- free response on Riemann Sums and function behavior (9 points)
  - estimating area under a curve using Riemann Sums
  - tangent lines
  - Critical points
- free response on Critical points of a function, maxs, mins, increasing, decreasing (9 points)
- free response on Implicit Differentiation (9points)
  - finding y-intercepts
  - find dy/dx
  - determine whether the lines tangent at the y-intercepts are parallel
  - Points where tangent line is horizontal

Total: $(1.2) \times 13 + 36 = 13 + 36 + 2.6 = 41.6$

★ HW 59 Due Tuesday 10/27

★ HW 60 Due Monday 11/2

No Calc on Final!