

Math Test on Chapter 13

- 13-1 – From the Discrete to the Continuous
 - HW Pgs. 765-766 (#'s 2, 4-7, 10, 12, 14); Wksts. 13-1A and 13-1B
 - Calculating and estimating distance traveled using a velocity/rate versus time graph (ex. mph vs. hours) – the area between the curve and the time axis represent distance traveled
 - Constant acceleration graphs create a triangle to calculate distance traveled.
- 13-2 – Riemann Sums
 - HW Pgs. 771-772 (#'s 1-5, 11-13, 16, 17, 22, 23), Pg 810 (#'s 1,2); Wksts. 13-2A and 13-2B
 - Riemann Sums can be used to estimate areas or distances under curves - questions will specify whether to evaluate using the left or right endpoints.
 - $\Delta x = \frac{b-a}{n} = \frac{\text{max x value} - \text{min x value}}{\text{number of intervals}}$
 - Table to calculate Riemann Sums

Interval	z_i	$f(z_i)$	Δx	$f(z_i) \Delta x$
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 Number of intervals

$$\sum_{i=1}^{10}$$

- 13-3 – The Definite Integral
 - HW Pgs. 778-779 (#'s 1, 3-8, 11-13, 15); Wkst. 13-3
 - Definite integrals give the exact value of the area under a curve: $\int_a^b f(x) dx$
 - Integrals are over a specific portion of a function
 - If the function is a constant, then $\int_a^b c = c(b-a)$.

- 13-4 – Properties of Definite Integrals
 - HW Pgs. 785-786 (#' 2-4, 10, 11, 14); Wksts. 13-4 and 13-4B
 - **You can use the antiderivatives to evaluate the area under any curve – this includes finding a definite integral and finding the distance traveled by an object**
 - **Finding the antiderivative is the same as finding an integral**
- 13-7 – The Fundamental Theorem of Calculus
 - HW Pgs. 803-804 #'s 2,4, 6, 12, 13; Wkst. 13-7 (see this for basic integration rules)
 - The Fundamental Theorem of Calculus:
 1. If g is a function whose derivative is f , then $\int_a^b f(x) dx = g(b) - g(a)$
 2. If $g(x) = \int_a^x f(t) dt$ for all x from a to b , then $g'(x) = f(x)$ for all such x . – **means that the derivative of an integral function is the original function.** (#6- pg. 803)
 - Integral notation of antiderivatives $\int f(x) dx = g(x) + c$
 - By integrating the integral you get the antiderivative, which must include plus c for a constant. – **Indefinite integrals include +c while definite integral do not as they have a number**
 - The integrand is the function that will be integrated (the function after the integral “ \int ” sign). You can show that the derivative of an evaluated integral is equal to the integrand by finding the derivative of the evaluated integral.

- **Power rule for integration**
 - $\int (x^n) dx = \frac{x^{n+1}}{n+1} + c$ for $n \neq -1$
 - When you find the indefinite integral, you can check your answer with differentiation. You will know you are correct if the derivative you find is equal to the original integrand.
 - Differentiation is the inverse of integration
 - $\frac{d}{dx} [\int f(x) dx] = f'(x)$
 - Integration is the inverse of differentiation
 - $\int f'(x) dx = f(x) + c$ (a constant)
- Chapter Review
 - Ch. Self Test – Pg. 809 (#'s 1-5, 7, 10, 11)
 - Ch Review - Pgs. 810-811 (#'s 2, 4, 9-11, 16, 18, 22-25)

Worksheets

- Recent packet – Wksts. 13-1A, 13-1B, 13-2A, 13-2B, 13-3, 13-4, 13-7
- Riemann Sums WS #1
- WS 13-4B