

Chapter 5: Integration Review Assignment

Name:

Date:

Your Target Grade For This Chapter: (MUST Indicate)
Please CIRCLE One Of: A+ A B C
(This helps the marker give you feedback.)

- This assignment is to help YOU. It will identify 3 things for you:

- How much of this chapter you really understand,
- What you need more practice on before the test,
- And whether you're doing each step correctly.

- Some of the answers are on the last page – what we want to see is your work. So show *all* necessary work, or you'll see stuff written down right around here... ↑ 😊

This assignment...	
Is Good To Go!	Needs More Work On Question(s):

1. a) Use the Rectangular Approx. Method with 4 rectangles and using the midpoint of each interval for the height, to estimate the integral $\int_0^2 \ln x dx$ to 2 dec. places.

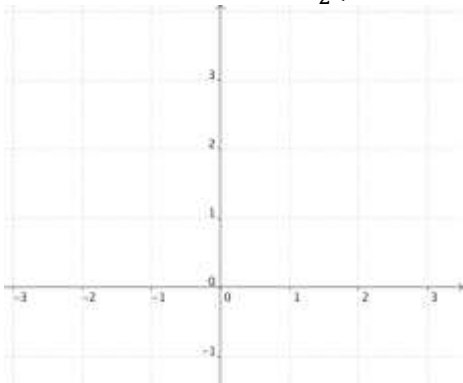
b) Which estimate (Left, Right, or Midpoint) would give the *largest* estimate (an overestimate), **and WHY?**

2. Express

$$\lim_{\max \Delta x_k \rightarrow 0} \sum_{k=1}^n e^{\sin(x_k^*)} \Delta x_k,$$

where $a = -1$ and $b = 12$; as a definite integral – but don't evaluate it. (just the answer here is fine)

3. Evaluate the following by first graphing it and then interpreting it geometrically, using areas of common shapes: $\int_{-2}^2 (1 + \sqrt{4 - x^2}) dx$.



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4. Evaluate :

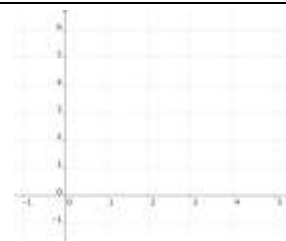
a. $\int \left[\frac{1}{3x^2} + 2\sqrt[3]{x} + -\frac{7}{x} \right] dx$

b. $\int \frac{x^3 + 5x^4 - 7x}{x^2} dx$

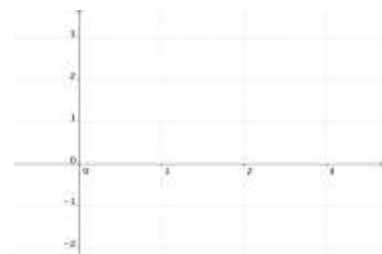
c. $\int [3 \cos x + e^{-3x}] dx$

d. $\int \left[\frac{3}{1+x^2} - \frac{2}{\sqrt{1-x^2}} \right] dx$

5. Find the area under the curve $f(x) = 3\sqrt{x}$ on the interval $[1,4]$ algebraically. (Show sketch.)



6. Find the area (not *signed area*) between the curve $y = x^2 - 2x$ and the x-axis, on the interval from $[0,3]$, algebraically. (Show sketch of graph.)



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7. Evaluate $\int_1^3 \frac{\sin^2(x)}{\ln(3x+x^2)} dx$ using the built-in function in your graphing calculator. ☺ (Show what you type in.)

8. Find

a. $\frac{d}{dx} \int_1^x \frac{e^{4t+1}}{6t^3} dt.$

b. $\frac{d}{dx} \int_3^{\tan x} \frac{1}{t^2+1} dt.$

9. Evaluate *algebraically* by the Method of Substitution:

a. $\int \frac{x^7}{(2-4x^8)} dx$

b. $\int e^{3x} \sin(e^{3x} + 2) dx$

10. Evaluate *algebraically*:

a. $\int_0^1 x\sqrt{1-x^2} dx$

b. $\int_0^\pi \cos^8 x \sin x dx$

11. **[Audio question!]** Please answer the following question with a 90 second (**max**) audio recording, saved as an “.mp3”, and upload it separately (or give the link to it) in the same hand-in box for this assignment.

Describe how the Definite Integral is a limit of Riemann Sums. (as described in Lesson 2)

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(No need to upload this page)

CHECK WITH THESE BEFORE SUBMITTING

Answers for some of the questions:

(Remember: Do these on your own, and submit your best effort.)

1. a) -0.45 b) -----

2. -----

3. $2\pi + 4$

4. a) ----- b) ----- c) ----- d) -----

5. 14

6. $\frac{8}{3}$

7. 0.64

8. a) ----- b) 1 (Hint: Simplify your final answer more using the trig identity: $1 + \tan^2 x = \sec^2 x$, and then you'll get the answer of "1".)

9. a) $-\frac{1}{32} \ln|2 - 4x^8| + C$ b) $-\frac{1}{3} \cos(e^{3x} + 2) + C$

10. a) $\frac{1}{3}$ b) $\frac{2}{9}$

11. Need help on recording sound on a Mac?

- Do an internet search with something like "easy record voice Mac mp3"

Need help on recording sound on a PC?

- Do an internet search with something like "easy record voice PC mp3"