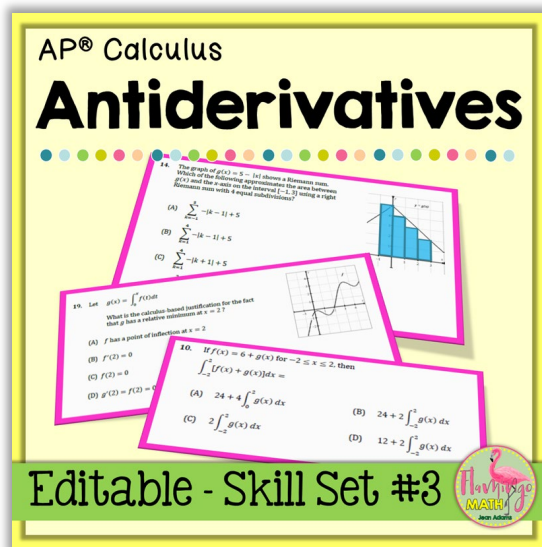


Antiderivatives Skill Set #3



KEY CONCEPTS/TOPICS:

Topic 6.3 Riemann Sums, Summation Notation, and Definite Integral Notation
Topic 6.4 The Fundamental Theorem of Calculus and Accumulation Functions
Topic 6.5 Interpreting the Behavior of Accumulation Functions Involving Area
Topic 6.6 Applying Properties of Definite Integrals
Topic 6.7 The Fundamental Theorem of Calculus and Definite Integrals
Topic 6.8 Finding Antiderivatives and Indefinite Integrals
Topic 6.9 Integrating Using Substitution

Product Overview

Your Calculus students will practice AP-Style multiple choice questions related to the unit 6 in the CED Binder with this 20-question skill set. The fully-editable resource is designed as a series of “Multiple Choice Monday” Exam Prep and Practice. All questions in the set are non-calculator prompts and should be able to be completed in a 40 to 50-minute class period.

Multiple Choice Monday

Multiple Choice Monday Antiderivatives

Name _____

1. $\int_1^2 (4x^3 - 6x) dx =$

- (A) 42 (B) 36 (C) 6 (D) 4

2. $\int_0^3 |x - 1| dx$

- (A) 0 (B) $\frac{3}{2}$ (C) $\frac{9}{2}$ (D) $\frac{1}{2}$

3. The function $f(x) = \int_2^x f(t) dt$ has a local maximum at $x =$?

- (A) 0 (B) 1 (C) 2 (D) 3

4. $\int \frac{1}{1+x} dx$

- (A) $\ln|x| + C$ (B) $\ln|x+1| + C$
(C) $\frac{1}{1+x} + C$ (D) $5x - \frac{5}{x} + C$

5. $\int x \sqrt{x^2 + 1} dx =$

- (A) $\frac{1}{3}(x^2 + 1)^{\frac{3}{2}} + C$ (B) $\frac{2}{3}(x^2 + 1)^{\frac{3}{2}} + C$
(C) $\frac{3}{4}(x^2 + 1)^{\frac{3}{2}}$ (D) $\frac{1}{3}x^2(x^2 + 1)^{\frac{3}{2}} + C$

6. $\int \tan(2x) dx$

- (A) $-2 \ln|\cos(x)|$ (B) $-2 \ln|\cos(2x)|$
(C) $-\frac{1}{2} \ln|\cos(x)|$ (D) $-\frac{1}{2} \ln|\cos(2x)|$

7. $\int_0^1 x dx$

- (A) 1 (B) 2 (C) 3 (D) 4

8. $\int_{\pi/4}^{\pi/2} \frac{\cos x}{\sin x} dx =$

- (A) $\ln \frac{\pi}{4}$ (B) $\ln \sqrt{2}$ (C) $\ln \sqrt{3}$ (D) $\ln \frac{\sqrt{2}}{2}$



Students gain valuable practice for AP Calculus Exam concepts

9. $\int_0^8 \frac{dx}{\sqrt{1+x}}$

- (A) $\frac{3}{2}$ (B) 2 (C) 4 (D) 6

10. If $f(x) = 6 + g(x)$ for $-2 \leq x \leq 2$, then

$\int_{-2}^2 [f(x) + g(x)] dx =$

- (A) $24 + 4 \int_0^2 g(x) dx$ (B) $24 + 2 \int_{-2}^2 g(x) dx$
 (C) $2 \int_{-2}^2 g(x) dx$ (D) $12 + 2 \int_{-2}^2 g(x) dx$

11. $\sum_{k=1}^n k^2 \left(\frac{3}{n}\right)$

12. The function $f(x) = \frac{1}{x}$ is continuous on the interval $[2, 8]$. Find the value of the definite integral $\int_2^8 f(x) dx$.

- (A) 90 (B) 45 (C) 15 (D) 6

13. If the substitution $u = \sqrt{x+1}$ is made, the integral

$\int_0^8 \frac{\sqrt{x+1}}{x} dx =$

(A) $\int_0^8 \frac{2u^2}{u^2-1} du$

$\int_1^3 \frac{u^2}{u^2-1} du$

(B) $\int_0^8 \frac{2u^2}{u^2-1} du$

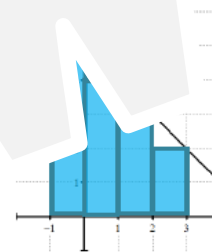
$\int_1^3 \frac{2u^2}{u^2-1} du$

graph of $f(x) = -|k-1|$ on the interval $[-1, 3]$. The area between the graph and the x-axis is approximated using a right Riemann sum with 4 subintervals.

$-|k-1|$

(B)

(D) $\sum_{k=1}^3 -\frac{1}{4}|k+1| + 5$



15. Given $\int_a^b f(x) dx = 3a + 2b$ find $\int_a^b [f(x) + 5] dx$

- (A) $7b + 4a$ (B) $7b + 2a$ (C) $7b - 2a$ (D) $3a + 2b + 5$



A variety of AP-Style questions for Limits, Continuity and Derivatives

16. $\frac{d}{dt} \int_x^{x^3} \cos(t^2) dt =$

- (A) $\cos(x^6) - \cos(x^2)$ (B) $6x^2 \cos(x^2) - 2 \cos(x)$
 (C) $6x^5 \cos(x^6) - 2 \cos(x)$ (D) $3x^2 \cos(x^6) - \cos(x^2)$

17. Which of the limits is equivalent to the following definite integral?

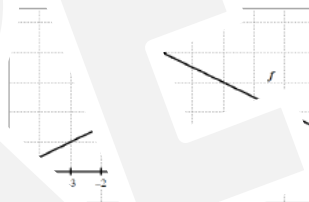
$$\int_0^4 e^x dx$$

- (A) $\lim_{n \rightarrow \infty} \sum_{k=1}^n \left(e^{\frac{4k}{n}} \right) \cdot \left(\frac{4}{n} \right)$ (B) $\lim_{n \rightarrow \infty} \sum_{k=1}^n \left(e^{\frac{k}{n}} \right) \cdot \left(\frac{1}{n} \right)$
 (C) $\lim_{n \rightarrow \infty} \sum_{k=1}^n \left(e^{\frac{2k}{n}} \right) \cdot \left(\frac{2}{n} \right)$ (D) $\lim_{n \rightarrow \infty} \sum_{k=1}^n \left(e^{\frac{k}{n}} \right) \cdot \left(\frac{2}{n} \right)$

$$\int_{-3}^2 f(x) dx$$

is

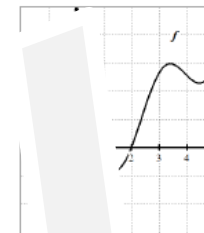
equal to



- (A) $-\frac{15}{2}$ (B) $-\frac{15}{2}$ (C) 6 (D) $\frac{15}{2}$

19. Let $g(x) = \int_0^x f(t) dt$

What is the calculus-based justification for the fact that g has a relative minimum at $x = 2$?



- (A) f has a point of inflection at $x = 2$.
 (B) $f'(2) = 0$ and f changes signs.
 (C) $g'(2) = 0$ and g changes signs.
 (D) $g'(2) = 0$ and g changes signs.

$$3^x$$

- (A) 3^x (B) 3^x (C) $81 \ln 3$ (D) 78



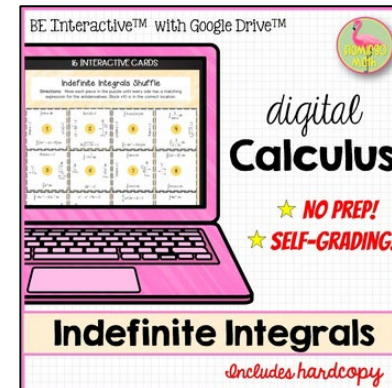
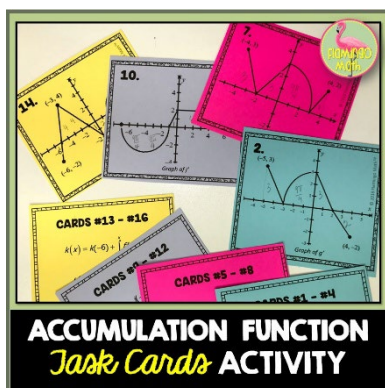
Use as a timed-practice test prep prior to the AP Exam



My goal is to help you bring balance into your teacher life by providing relevant content, engaging activities, and comprehensive assessments for your high-stakes math course.



More Resources for YOU



Let's keep in touch! I'm here for you!



I appreciate your support and interest in my store.
Please email me with questions or comments:
jean@flamingomath.com

Sign up for my Newsletter to
gain access to an Exclusive
FREE Resource Library!

