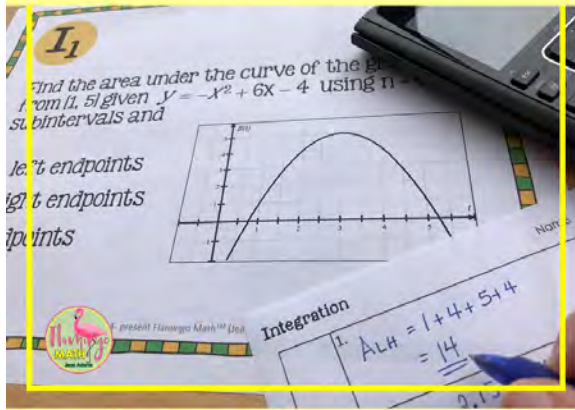


Integration Task Cards



INTEGRATION STATIONS TASK CARDS ACTIVITY

Your AP Calculus students will have 11 task cards to use in a station rotation activity for a review of both indefinite and definite integrals.

About the Resource:

Use this activity as an end-unit review for **INTEGRATION**. The concepts will help your students work through the rules for area under a curve by reviewing the following topics:

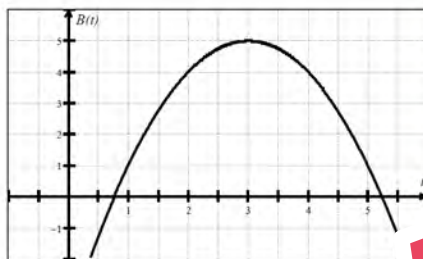
- ☐ applying left, right, midpoint, and trapezoidal approximations
- ☐ Riemann sums and definite integrals
- ☐ indefinite integration
- ☐ Mean Value Theorem
- ☐ integration by u-substitution
- ☐ the accumulation function
- ☐ natural log, exponential, other bases
- ☐ inverse trigonometric function integration



I₁

Find the area under the curve of the graph from [1, 5] given $y = -x^2 + 6x - 4$ using $n = 4$ subintervals and

1. left endpoints
2. right endpoints
3. midpoints



N₁

4. The rate at which water flows out of a drain pipe in gallons per minute is given by a differentiable function f of time t . The table below shows the rate as measured every 3 hours for a 24-hour period.

A. Use a trapezoidal approximation with 4 sub-intervals of equal length to find $\int_0^{24} f(t) dt$.

B. Using correct units, explain the meaning of $\int_0^{24} f(t) dt$ in the context of the problem.

t	$f(t)$
0	6
3	9
6	12
9	15
12	18
15	21
18	24
21	27
24	30

T₁

$$\int_4^{e^2-3}$$

$$\int_0^\pi (1 + \sin \theta) d\theta$$

E

8. For a given school year, your grade (percent) for a course is modeled by the function

$$g(x) = 20 \cos\left(\frac{\pi}{15}x\right) + 78$$

Find your average grade for the school year. Write what you entered into the calculator as your work.

9. Find the value(s) of c guaranteed by the Mean Value Theorem for Integrals for $f(x) = \frac{9}{x^3}$ on the interval $[1, 3]$.

G

Find the indefinite integral.

10. $\int (3 \sin^5 \theta \cos \theta) d\theta$

11. $\int \frac{x^4 - 2x^3}{x^5} dx$

12. $\int \frac{e^{1/x}}{x^2} dx$

A

Use the graph to evaluate the following.

21. $\int_{-8}^0 f(x) dx$

22. $\int_4^6 f(x) dx$



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R

A particle moves along the x -axis so that its velocity at any time t is given by $v(t) = t^2 - 8t + 12$. At time $t = 1$ the position of the particle is $s(1) = 3$.

13. Find the position function for the particle.

14. Find the acceleration function for the particle.

15. On what interval is the particle moving left?

16. Find the displacement of the particle from $t = 0$ to $t = 7$.

17. Find the total distance the particle travels from $t = 0$ to $t = 7$.

T

Find the definite integral.

23. $\int \tan 3\theta d\theta$

24. $\int \frac{x^2 - 3x + 5}{x} dx$

25. $\int \frac{7}{x \ln x} dx$

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I₂

Find the indefinite integral.

26. $\int (e^x + 3e^{-3x} - e^{-x}) dx$

27. $\int e^x \sqrt{3 - e^x} dx$

28. $\int e^{-x} \tan(e^{-x}) dx$

O

Find the definite integral.

29. $\int_0^{\sqrt{3}} \frac{5}{9} dx$

N₂

30. $\int \frac{1}{x} dx$

31. $\int 3^{\cos x} \sin x dx$

34. $\int \left(x - \frac{x}{2^2} \right) dx$

Integr

I₁

4A

T₁**E****G**

8.

9.

10.

11.

12.

13.

14.

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17.

18.

19.

20.

21.

22.

T₂**I₂****O****N₂**

32.

33.

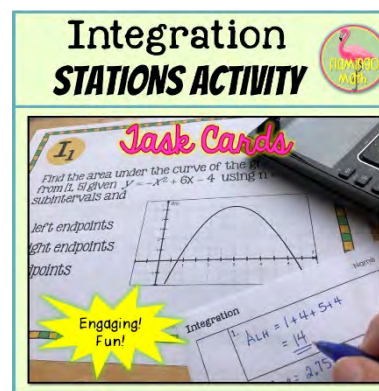
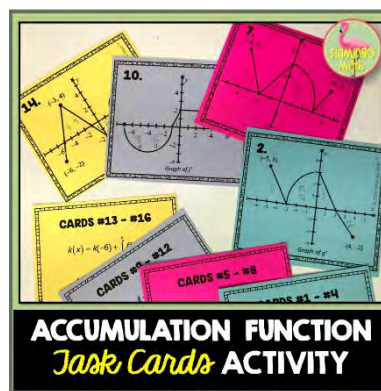
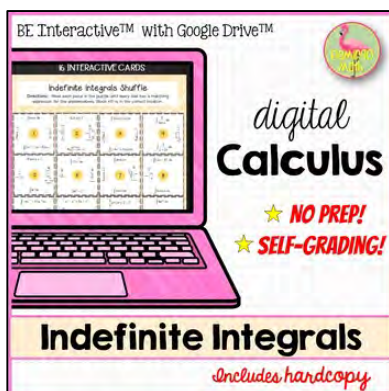
34.



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



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