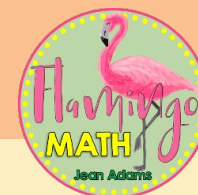


TURKEY SHOWDOWN



- ☐ 30 Task Cards
- ☐ Derivatives
- ☐ Applications
- ☐ Thanksgiving-Themed



A THANKSGIVING DERIVATIVES REVIEW



Turkey Showdown A Thanksgiving Review

This AP Calculus Derivatives Review is a fun-filled Kagan® strategy for your students.

A fun-filled game of "SHOWDOWN" (a Kagan strategy) just might be what you need the day before Thanksgiving Break!

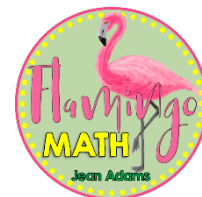
The activity includes 30 task cards and two blank cards covering basic derivative rules, related rates, inverse trigonometric derivatives, tangent lines and more.

Just pick a SHOWDOWN CAPTAIN, have students work the cards independently. When ready, give a "thumbs up!" to the captain.

Captain calls "SHOWDOWN!" If everyone is correct let them celebrate! Hey what the heck, they are working math and have a few free days off! Then, rotate the CAPTAIN job and play another round.

Alternative Teaching Suggestions:

- Use the activity as a whole class review
- Use the cards as a small group activity
- Use the set of questions as a review prior to assessing students



Derivative Review Cards

1

Given: $f(x) = x^3 - 5x$
Use the definition of the derivative to find $f'(x)$.



© 2015 Flamingo Math.com

2

Given: $f(x) = x^3 - 5x$
Find the average rate of change of $f(x)$ between $x = 1$ and $x = 5$.



© 2015 Flamingo Math.com

3

Given: $f(x) = \frac{x^2 - 16}{x + 4}$

Find all the points $x = a$ where the function is discontinuous.



© 2015 Flamingo Math.com

4

Given: $f(x) = \frac{x^2 - 16}{x + 4}$

For each point of discontinuity, find $\lim_{x \rightarrow a} f(x)$ if it exists.



© 2015 Flamingo Math.com

5

Use the product rule to find $\frac{dy}{dx}$:

$$y = (5x^2 + 3x)(x^2 - 3x + 2)$$



© 2015 Flamingo Math.com

6

Given: $f(x) = \frac{3x + 1}{2x - 5}$

Use the quotient rule to find:

A. $g'(x)$

B. $g'(3)$



© 2015 Flamingo Math.com

7

Find the derivative of

$$y = 4\sqrt[3]{x} - 6\sqrt{x}$$



© 2015 Flamingo Math.com

8

Find an equation of the tangent line to the graph of $f(x) = (x - 4)^{10}$ at the point where $x = 5$.



© 2015 Flamingo Math.com

9

Find the x -coordinates of all points on the graph of $y = x^3 - 4x^2 + 5x$ at which the tangent line is horizontal.



© 2015 Flamingo Math.com

10

Find the x -coordinates of all points on the graph of $y = x^3 - 4x^2 + 5x$ at which the tangent line is parallel to the line $2y - 10x - 7 = 0$.



© 2015 Flamingo Math.com

13

If a pilgrim drops a pumpkin from a cliff 800 ft. above the ground, then the pumpkin's distance above the ground after t seconds is $800 - 16t^2$ ft. Find the velocity at $t = 3$ seconds.



© 2015 Flamingo Math.com

14

If a pilgrim drops a pumpkin from a cliff 800 ft. above the ground, then the pumpkin's distance above the ground after t seconds is $800 - 16t^2$ ft. With what velocity does the pumpkin strike the ground?



© 2015 Flamingo Math.com

11

If $6x^2 + 8xy + y^2 = 6$ find y'



© 2015 Flamingo Math.com

12

If $4x^2 + y^2 = 6$ find y''



© 2015 Flamingo Math.com

15

If $f(x) = (\sin x - \cos x)^2$, find the equation of the normal line to the graph of f through the point $(0, 1)$.



© 2015 Flamingo Math.com

16

Gas is being pumped into a spherical balloon at the rate of 5 cubic feet per minute. If the pressure is constant, find the rate at which the radius is changing when the diameter is 18 inches.



© 2015 Flamingo Math.com

Task Cards

17



Two little pilgrims throw a stone into a lake, causing circular waves. The radius of the outer ring increases at a constant rate of 0.5 m/sec. Find the rate at which the circumference of the outer ring is changing when its radius is 4 meters?

© 2015 Flamingo Math.com

18



A point $P(x, y)$ moves on the graph of $y^2 = x^2 - 9$ such that $\frac{dx}{dt} = \frac{1}{x}$. Find dy/dt at the point $(5, 4)$.

© 2015 Flamingo Math.com

19



Sketch the graph of $y = \sqrt[3]{x+1} + 5$. Locate all x -values where the function has a vertical tangent line.

© 2015 Flamingo Math.com

20



Find the equation of the tangent line of $x^2y - y^3 = 8$ at $P(-3, 1)$.

© 2015 Flamingo Math.com

21



Given: $f(x) = \cos^{-1}(2x)$
Find $f'(x)$.

© 2015 Flamingo Math.com

22



Find $\frac{dy}{dx}$ of $y = \sin^{-1} \sqrt{1-x^2}$

© 2015 Flamingo Math.com

23



Differentiate $f(x) = xe^{-x}$

© 2015 Flamingo Math.com

24



Find the derivative: $y = \ln \sqrt{x}$

© 2015 Flamingo Math.com

25



Find $s'(t)$ given $s(t) = 8^{-2t}$

© 2015 Flamingo Math.com

26



Differentiate: $y = \log_5(x-5)$

© 2015 Flamingo Math.com

27



Find $f'(x)$ for $f(x) = 2(\sin x)(\cos x)$

© 2015 Flamingo Math.com

28



Find the derivative, given $g(x) = 3^{\cot x}$

© 2015 Flamingo Math.com

29



Find $\frac{dy}{dx}$: $y = (\ln x)^2$

© 2015 Flamingo Math.com

30



Find the derivative
 $y = e^{-5x}$

© 2015 Flamingo Math.com

31



© 2015 Flamingo Math.com

32



© 2015 Flamingo Math.com