AP Calc AB Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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 WS Assessment

 Target 7:

Derivative: other functions

**I can:**

* Calculate derivatives of familiar functions
* Calculate derivatives of products and quotients of differentiable functions

Unit 2: Differentiation: Definition and Fundamental Properties

HW Target 7

Unit 2 Progress Check FRQ Part A and B

Exponential and Logarithm functions

Formula Note: Apply for chain rule
 as well.

Find the derivative of the followings

y = 2ex y = e2x y = e-x

y ' = y ' = y' =

y = e -x/4 y = e x + x^2 y = x2ex – xex

y' = y' = y ' =

y = 8x y = 9 -x y = 3 cscx

y' = y' = y' =

At what point on the graph of the function y = 2x – 3 does the tangent line have slope 21?

y = ln (x2) y = (ln x)2 y = ln (1/x)

y ' = y' = y' =

y = ln (ln x) y = x ln(x) – x y = ln (x2 + 1)

y ' = y' = y' =

A line with slope m passes through the origin and is tangent to line y = ln (x/3).

 What is the value of m?

y = y = y =

y ' = y ' = y ' =

Logarithmic Differentiation (i.e. take ln both sides) Find the derivative of

 y = (x3 + 4) cos x

Consider the function  f(x) =  . Determine the slope of the line perpendicular to the graph of *f* at *x* =1 .

, Determine the slope of the line perpendicular to the graph of *f* at *x* =-2.

What is the derivative of six Trigonometric and six Inverse Trigonometric functions? Cheatsheet

 Trig Inverse Trig

 (sinx)' = ? (sin-1x)' = ?

 (cosx)' = ? (cos-1x)' = ?

 (tanx)' = ? (tan-1x)' = ?

 (cotanx)' = ? (cotan-1x)' = ?

 (secx)' = ? (sec-1x)' = ?

 (cosecx)' = ? (cosec-1x)' = ?

Find the derivative of the followings

 a. (tan5x)' = ? b. (sec3x)' =? c. (cot11x)' = ?

 d. (tan5 4x)' = ? e. (3cot6 8x)' =? f. (8csc4 5x)' = ?

 g. (x-3cotx) ' = ? h. (secx cscx)'=? i. tan(sin3x) = ?

Find the derivative of the followings

 a. (sin x2)' = ? b. (sin2 x)' =? c. (sin(sinx))' = ?

 d. (cos x2)' = ? e. (cos2 x)' =? f. (cos(cosx))' = ?

Use the identity sin 2x = 2sinxcosx to find the derivative of sin 2x

Find the derivative of

 a. y = x2 sin(x) b.

For each derivative below, write the “original” antiderivative function. Remember “ + C”

 a. y ' = cosx y =? b. y' = sin2x y = ?

 c. y' = sec2(3x) y = ? d. y' = csc2 (4x) y = ?

 e. y' = 5secx tan x y = ?

Find the derivative of the followings

 a. (sin-1 4x)' = ? b. (cot-1 x0.5)' =? c. (sec-1 x/3)' = ?

 d. (cos-1 5x2)' = ? b. ((sin-1 x)2)' =? c. (cot-1(cotx))' = ?

Find an equation for the line tangent to the graph of y = tan x at the point ( π/4, 1)

Find an equation for the line tangent to the graph of y = tan-1 x at the point ( 1, π/4)

 A particle moves along the x-axis so that its position at any time t ≥ 0 is x(t) =

 What is the velocity of the particle when t = 16

The spread of a flu in a certain school is modeled by the equation

 where F(t) is the total number of students infected t days after the flu is first noticed. Many of them may be well again at the time t.

a. Estimate the initial number of students infected with the flu.

b. How fast is the flu spreading after 3 days?

c. When will the flu spread at its maximum rate? What is this rate?

Assessment

Find the derivative of the following

Prove that all curves in the family

(k any constant) are perpendicular to all curves in the

family g(x) = ln (x) + c (c any constant) at their points of intersection. Show graph for stamp.

Let y = sin-1x. Show that