A

Answer:

$$f'(x) = e^{3x-2}(3x+1)$$

Find the Derivative:

$$f(x) = \tan^{-1}\left(\sqrt{x}\right)$$

$\frac{du}{1+u^2}$

$u = \sqrt{x}$ $\quad du = \frac{1}{2}x^{-1/2} = \frac{1}{2\sqrt{x}}$

$f' = \frac{\frac{1}{2\sqrt{x}}}{1+(\sqrt{x})^2}$

$f' = \frac{1}{2\sqrt{x}(1+x)}$

G

Answer:

$$f'(x) = \frac{1}{2\sqrt{x}(1+x)}$$

Find the Derivative:

$$f(x) = \frac{3^{2x}}{\sec x}$$

QUOTIENT

$f' = \frac{\sec x \cdot 2 \cdot 3^{2x} \cdot \ln 3 - 3^{2x} \cdot \sec x \tan x}{\sec^2 x}$

$f' = \frac{3^{2x}(2\ln 3 - \tan x)}{\sec x}$

O

Answer:

$$f'(x) = \frac{3^{2x}(2\ln 3 - \tan x)}{\sec x}$$

Use implicit differentiation to find an equation of the tangent line to the curve at the point (1,1):

$$x^2 - y^2 = 2xy - x$$

$2x - 2y\frac{dy}{dx} = 2x\frac{dy}{dx} + 2y - 1$

$-2y\frac{dy}{dx} - 2x\frac{dy}{dx} = -2x + 2y - 1$

$\frac{dy}{dx} = \frac{-2x+2y-1}{-2y-2x}$ @ $(1,1) = \frac{-1}{-4} = \frac{1}{4}$

$y - 1 = \frac{1}{4}(x-1)$

N

Answer:

$$y - 1 = \frac{1}{4}(x-1)$$

Find the equation of the line tangent to

$$f(x) = e^{-x^2}$$

At x = 1

$a = 1$

$f(a) = e^{-1} = \frac{1}{e}$

$f' = -2xe^{-x^2}$

$f'(a) = \frac{-2}{e}$

$y - \frac{1}{e} = \frac{-2}{e}(x-1)$

D

Answer:

$$\frac{1}{7}$$

R

Answer:

$$f'(x) = 2x\cos(x^2 - 1)$$

Find the Derivative:

$$f(x) = \sin(x^2 - 1)$$

S: sin (   ) | cos (x^2-1)

C: x^2-1 | $2x$

$f' = 2x \cos(x^2-1)$

Find the Derivative:

$$f(x) = xe^{3x-2}$$

PRODUCT

$f' = x \cdot 3e^{3x-2} + e^{3x-2} \cdot 1$

$f' = e^{3x-2}(3x+1)$

F

Answer:

$$y-\frac{1}{e}=\frac{-2}{e}(x-1)$$

Find the Derivative:

$$f(x)=\left(1+\frac{3}{x}\right)^{2x}$$

y

$\ln y = 2x \ln(1+3x^{-1})$

$\frac{1}{y}\frac{dy}{dx} = 2x \cdot \frac{-3x^{-2}}{1+3x^{-1}} + \ln(1+3x^{-1})\cdot 2$

$\frac{dy}{dx} = \left[\frac{\frac{-6}{x}}{1+\frac{3}{x}} + 2\ln\left(1+\frac{3}{x}\right)\right] y = \left[\frac{-6}{x+3} + 2\ln\left(1+\frac{3}{x}\right)\right]\left(1+\frac{3}{x}\right)^{2x}$

L

Answer:

$$f'(x)=\left[\frac{-6}{x+3}+2\ln\left(1+\frac{3}{x}\right)\right]\left(1+\frac{3}{x}\right)^{2x}$$

Find the Derivative:

PRODUCT

$$f(x)=x^5\sqrt{8-2x}$$

$f' = x^5 \cdot \frac{1}{2}(8-2x)^{-1/2} \cdot -2 + \sqrt{8-2x}\cdot 5x^4$

$f' = \frac{-x^5}{\sqrt{8-2x}} + \frac{5x^4\sqrt{8-2x}}{1}\cdot\frac{\sqrt{8-2x}}{\sqrt{8-2x}}$

$= \frac{-x^5 - 10x^5 + 40x^4}{\sqrt{8-2x}}$

$= \frac{-11x^5 + 40x^4}{\sqrt{8-2x}}$

I

Answer:

$$f'(x)=\frac{x^4(40-11x)}{\sqrt{8-2x}}$$

Find the Derivative:

$$f(x)=\frac{3}{(4x^2-7)^2}$$

$f = 3(4x^2-7)^{-2}$

$f' = -6(4x^2-7)^{-3}\cdot 8x = \frac{-48x}{(4x^2-7)^3}$

E

Answer:

$$f'(x)=\frac{-48x}{(4x^2-7)^3}$$

Evaluate:

$$\lim_{h\to 0}\frac{\tan[7(x+h)]-\tan(7x)}{h}$$

$f(x) = \tan(7x)$

$f' = 7\sec^2(7x)$

S

Answer:

$$f'(x) = 7\sec^2(7x)$$

If g and f are inverses of each other find

$f'(3)$:

x	g	g'
−1	3	7
2	7	5
3	−1	2
5	2	0

x-value for f ∴ y-value for g

$$f'(3) = \frac{1}{g'(?)} = \frac{1}{g'(-1)} = \frac{-1}{7}$$