

Quiz 6- Definition of Derivative

Using the Definition of Derivative, derive the following functions.

1.) $f(x) = \sqrt{x}$

2.) $f(x) = \frac{1}{x}$

3.) $f(x) = x^2 + 2x$

4.) What formula do we use for the Definition of Derivative?

Quiz 7- Power Rule

Use Power Rule to find the derivative of each of the functions.

1.) $3x^2$

2.) $4x^{25}$

3.) $-x^5$

4.) $x^2 - 3x$

5.) $3x + 1$

6.) $3 - 2x^4$

7.) $x^3 - 5x^2 + 3x$

8.) $-43x^2 - 7x^{2000} + 9.0237$

9.) $-20x^{15} + 3x^{13} - 6x^9 - 70x$

10.) $x^{-3} + -3.3x$

11.) $-4x^{-9} + 5x^{-2} - 17x^3$

12.) $3.425x^2 - 31x^{-2}$

13.) $\frac{3}{5}x^{15} - \frac{7}{12}x^3$

14.) $\frac{2}{5}x^{\frac{3}{4}} - 4x^{\frac{11}{4}} + 3x$

15.) x

Quiz 8- Memorized Derivatives

Derive the following functions using your knowledge of memorized derivatives.

1.) $-\sin(x)$

2.) $\sin(x)$

3.) $-\cos(x)$

4.) $\cos(x)$

5.) $\tan(x)$

6.) $\sec(x)$

7.) $\csc(x)$

8.) $\cot(x)$

9.) $\ln(x)$

10.) e^x

11.) 2^x

12.) $\arcsin(x)$

13.) $\arccos(x)$

14.) $\arctan(x)$

15.) \sqrt{x}

Quiz 9- Product Rule

Derive the following functions using the Product Rule.

1.) $x(x - 1)$

2.) $(5x + 3)(3x - 7)$

3.) $x^3 \ln(x)$

4.) $\sin(x)\cos(x)$

5.) $(x^2 + 3)(5x^3 - 4x)$

6.) $5x^3 e^x$

7.) $x^6(x^3 - 2x^2)$

8.) $\sqrt{x}(3x^3 - 4x)$

9.) $6x^4 \sin(x)$

10.) $\sqrt{x} \tan(x)$

11.) $x^{\frac{3}{4}} \left(\frac{1}{x}\right)$

12.) $3^x \sec(x)$

Quiz 10- Quotient Rule

Derive the following functions using Quotient Rule.

1.) $\frac{x^2}{3x-1}$

2.) $\frac{x^3-4x^2}{2x^2+5x}$

3.) $\frac{\ln(x)}{x^3-2x}$

4.) $\frac{e^x-3x^2}{x-1}$

5.) $\frac{5\sin(x)+3}{\cos(x)}$

6.) $\frac{4^x}{x^3-3x^2}$

7.) $\frac{x^3}{\cot(x)}$

8.) $\frac{\sqrt{x}+x^2}{e^x}$

Quiz 11- Chain Rule

Derive the following functions using Chain Rule.

1.) $(5x - 3)^3$

2.) e^{-2x^2}

3.) $\sin(x^3)$

4.) $\frac{\ln(2x^2)}{(x-3)^2}$

5.) $(x^2 - 3x)^3 5^{x^4}$

6.) $(4x^3 + 1)^2 \sin(\sqrt{x})$

7.) $\cos^3\left(\frac{-x^2}{2}\right)$

8.) $\sec(\tan(\sqrt{x}))$

9.) $\sin^5(x^3 - 4x)$

10.) $\sin^2(\cos(5x^3))$

Quiz 12- Implicit Differentiation

1.) Using Implicit Differentiation, differentiate the following function.

$$3x^2 - 2xy + y^2 = 12$$

a.)1st Derivative-

b.)2nd Derivative-

2.) Using Implicit Differentiation, differentiate the following function.

$$4x^3 + 2x^2y^3 - \frac{x}{3y} - y^5 = -3$$

a.)1st Derivative-

b.)2nd Derivative-

Quiz 13- Inverse Trig

Find the derivative of each function using your knowledge of Inverse Trig Functions and past rules.

1.) $\arcsin(x^2)$

2.) $\arccos(\ln(\sqrt{x}))$

3.) $\arctan(\sin^3(-\frac{x}{2}))$

4.) $\arccos^2(\frac{x^4-2x}{1})$

5.) $\arctan(\sin^2(2x))$

6.) $\arcsin(e^{2x}\ln(3x))$