

# Key to Derivative Rules Practice

References:

[https://www.whitman.edu/mathematics/multivariable/multivariable\\_03\\_Rules\\_for\\_Finding\\_Derivatives.pdf](https://www.whitman.edu/mathematics/multivariable/multivariable_03_Rules_for_Finding_Derivatives.pdf)  
and Kuta Product and Quotient Rules sheets from online

Derivatives Rules Practice – for Google Form

<https://tinyurl.com/BasicDerivativeRules>

<https://goo.gl/forms/B9bxZnrmDF2evWCn2>



To find the derivative of the following function, you would need to use

$$1. f(x) = (2x^4 - 3)(x^2 + 1)$$

1.  A. Product Rule only *side-by-side means multiplication ("product")*  
B. Quotient Rule only  
C. Chain Rule only  
D. Product Rule and Chain Rule  
E. Quotient Rule and chain rule

To find the derivative of the following function, you would need to use

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

2. *fraction with "x" in numerator and denominator*  
A. Product Rule only  
 B. Quotient Rule only  
C. Chain Rule only  
D. Product Rule and Chain Rule  
E. Quotient Rule and chain rule

3. Which of the following is the correct set-up for finding the derivative of the following?

$$x\sqrt{169 - x^2}$$

- Product Rule because multiplication AND chain rule because can do derivative of "inner" function 169 - x^2*
- A.  $y' = (1)(169 - x^2)^{1/2} - (x)\left(\frac{1}{2}(169 - x^2)^{-1/2}\right)(-2x)$
- B.  $y' = (1)\left(\frac{1}{2}(169 - x^2)^{-1/2}\right)(-2x)$
- C.  $y' = (1)\left(\frac{1}{2}(169 - x^2)^{1/2}\right)$

D.  $y' = (1)(169 - x^2)^{1/2} + (x)\left(\frac{1}{2}(169 - x^2)^{-1/2}\right)(-2x)$

*f' · g + f · g' did chain rule to get g'*

$$(x^2 - 4x + 5)\sqrt{25 - x^2}$$

↑  
multiplication so need product rule

$$\sqrt{1 + x^4}$$

$$(x^2 + 1)^3$$

$$k(x) = 3(x^2 + 2x)^{3/2}$$

4. To find the derivative of the following function, you would need to use

- A. Product Rule only
- B. Quotient Rule only
- C. Chain Rule only
- D. Product Rule and Chain Rule
- E. Quotient Rule and chain rule

need chain rule because "inner"  $25 - x^2$  has a derivative

5. To find the derivative of the following function, you would need to use

- A. Product Rule only
- B. Quotient Rule only
- C. Chain Rule only
- D. Product Rule and Chain Rule
- E. Quotient Rule and chain rule

6. To find the derivative of the following function, you would need to use

- A. Product Rule only
- B. Quotient Rule only
- C. Chain Rule only
- D. Product Rule and Chain Rule
- E. Quotient Rule and chain rule

7. To find the derivative of the following function, you would need to use

- A. Product Rule only
- B. Quotient Rule only
- C. Chain Rule only
- D. Product Rule and Chain Rule
- E. Quotient Rule and chain rule

8. Which of the following is the correct set-up for finding the derivative of the following?

$$y = \frac{4x^5 + 2x^2}{3x^4 + 5} \quad \text{hi}$$

low (low) (d hi) - (hi) (d lo)

$$\text{A. } y' = \frac{(3x^4 + 5)(20x^4 + 4x) - (4x^5 + 2x^2)(12x^3)}{(3x^4 + 5)^2} \quad (10)(10)$$

$$\text{B. } y' = \frac{(4x^5 + 2x^2)(12x^3) - (3x^4 + 5)(20x^4 + 4x)}{(3x^4 + 5)^2}$$

$$\text{C. } y' = \frac{20x^4 + 4x}{12x^3}$$

$$\text{D. } y' = \frac{20x^4 + 4x}{12x^3 + 5}$$

9. Which of the following is the correct set-up for finding the derivative of the following?

$$y = (x^4 + 3)(-4x^5 + 5x^4 + 5)$$

A.  $y' = (4x^3)(-4x^5 + 5x^4 + 5) - (x^4 + 3)(-20x^4 + 20x^3)$

B.  $y' = (4x^3)(-4x^5 + 5x^4 + 5) + (x^4 + 3)(-20x^4 + 20x^3)$

C.  $y' = (4x^3)(-20x^4 + 20x^3) + (x^4 + 3)(-20x^4 + 20x^3)$

D.  $y' = 4(-4x^5 + 5x^4 + 5)^3(-20x^4 + 20x^3)$

10. Which of the following is the correct set-up for finding the derivative of the following?  $4(2x^2 - x + 3)^{-2}$

A.  $y' = -8(2x^2 - x + 3)^{-1}(4x - 1)$

B.  $y' = -8(2x^2 - x + 3)^{-3}$

C.  $y' = -8(2x^2 - x + 3)^{-3}(4x - 1)$  *use chain rule*

D.  $y' = -2(16x - 4)^{-3}$