

Week 6 Tuesday Homework (1322877)

Question 123456789101112131415161718

1. Question DetailsSCalcET6 3.2.001. [1315585]

Find the derivative of $y = (x^2 + 4)(x^3 + 3)$ in two ways.

(a) Using the Product Rule. (Note: Do not simplify after applying the rule.)

$$y' = \boxed{}$$


(b) By performing the multiplication first. (Note: Simplify completely after finding the derivative.)

$$y' = \boxed{}$$

(c) Do your answers agree?

 Yes No

2. Question DetailsSCalcET6 3.2.AE.04. [1290204]

[Video Example](#) [Online Textbook](#)

EXAMPLE 4

Let $y = \frac{x^3 + x - 2}{x^4 + 9}$. Then

$$\begin{aligned}
 y' &= \frac{(x^4 + 9) \frac{d}{dx} (\boxed{}) - (x^3 + x - 2) \frac{d}{dx} (\boxed{})}{(x^4 + 9)^2} \\
 &= \frac{(x^4 + 9)(\boxed{}) - (x^3 + x - 2)(\boxed{})}{(x^4 + 9)^2} \\
 &= \frac{(\boxed{}x^6 + \boxed{}x^4 + \boxed{}x^2 + \boxed{}) - (\boxed{}x^6 + \boxed{}x^4 - \boxed{}x^3)}{(x^4 + 9)^2} \\
 &= \frac{\boxed{}x^6 - \boxed{}x^4 + \boxed{}x^3 + \boxed{}x^2 + \boxed{}}{(x^4 + 9)^2}
 \end{aligned}$$

3. Question DetailsSCalcET6 3.2.004. [1290263]

Differentiate.

$$g(x) = 9\sqrt{x}e^x$$

$$g'(x) = \boxed{}$$

4. Question DetailsSCalcET6 3.2.006. [1291853]

Differentiate.

$$y = \frac{e^x}{1+x}$$

$$y'(x) = \boxed{}$$

5. Question DetailsSCalcET6 3.2.007. [1291364]

Differentiate.

$$y = \frac{5x-1}{2x+1}$$

$$y' = \boxed{}$$

6. Question DetailsSCalcET6 3.2.009. [1290906]
Differentiate.

$$V(x) = (5x^3 + 3)(x^4 - 2x)$$

$$V'(x) = \boxed{}$$

7. Question DetailsSCalcET6 3.2.013. [1290183]
Differentiate.

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

$$y' = \boxed{}$$

8. Question DetailsSCalcET6 3.2.015. [1290330]
Differentiate.

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

$$y' = \boxed{}$$

9. Question DetailsSCalcET6 3.2.018. [1291840]
Differentiate the following function.

$$y(t) = \frac{1}{t + 2e^t}$$

$$y'(t) = \boxed{}$$

10. Question DetailsSCalcET6 3.2.026. [1291574]
Differentiate.

$$f(x) = \frac{ax + b}{cx + d}$$

$$f'(x) = \boxed{}$$

11. Question DetailsSCalcET6 3.2.027. [1291229]
Find $f'(x)$ and $f''(x)$.

$$f(x) = x^4 e^x$$

$$f'(x) = \boxed{}$$

$$f''(x) = \boxed{}$$

12. Question DetailsSCalcET6 3.2.031. [1291033]
Find an equation of the tangent line to the given curve at the specified point.

$$y = \frac{4x}{x + 2}, \quad (2, 2)$$

$$y = \boxed{}$$

13. Question DetailsSCalcET6 3.2.035. [1291049]
The curve below is called a **witch of Maria Agnesi**. Find an equation of the tangent line to this curve at the point $(-2, 1/5)$.

$$y = \frac{1}{1 + x^2}$$

$$y = \boxed{}$$

14. Question DetailsSCalcET6 3.2.043. [807115]
Suppose that $f(5) = -1$, $f'(5) = 5$, $g(5) = -4$, and $g'(5) = -6$. Find the following values.

$$(a) (fg)'(5) = \boxed{}$$

$$(b) (f/g)'(5) = \boxed{}$$

$$(c) (g/f)'(5) = \boxed{}$$

15. Question DetailsSCalcET6 3.2.045.mi.nva [1387410]

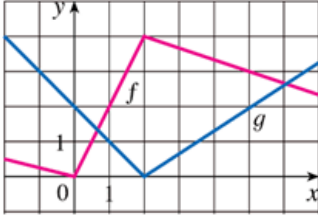
If $f(x) = e^x g(x)$, where $g(0) = 5$ and $g'(0) = 1$, find $f'(0)$.

16. Question DetailsSCalcET6 3.2.047. [807146]

If f and g are the functions whose graphs are shown, let $u(x) = f(x)g(x)$ and $v(x) = f(x)/g(x)$. Find the following.

(a) $u'(1) =$

(b) $v'(5) =$



17. Question DetailsSCalcET6 3.2.046. [807096]

If $h(2) = 9$ and $h'(2) = -6$, find the following.

$$\left. \frac{d}{dx} \left(\frac{h(x)}{x} \right) \right|_{x=2}$$

18. Question DetailsSCalcET6 3.2.050. [807169]

If f is a differentiable function, find an expression for the derivative of each of the following functions.

(a) $y = x^3 f(x)$

$y' = x^3 f'(x) + f(x)(3x^2)$

$y' = (3x^2) f'(x) + x^3 f(x)$

$y' = (3x^2) f'(x)$

$y' = x^3 f'(x) - f(x)(3x^2)$

(b) $y = \frac{f(x)}{x^3}$

$y' = \frac{3f(x) - xf'(x)}{x^4}$

$y' = \frac{xf'(x) - 3f(x)}{x^4}$

$y' = \frac{xf'(x) + 3f(x)}{x^4}$

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

(c) $y = \frac{x^3}{f(x)}$

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

$y' = \frac{f(x)(3x^2) - x^3 f'(x)}{(f(x))^2}$

(d)

Assignment Details

Name (AID): **Week 6 Tuesday Homework (1322877)**

Submissions Allowed: **5**

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