

Find the derivative.

1) $f(x) = \frac{8}{\sqrt{x}} - \frac{3}{x} + \frac{6}{x^5}$

1) _____

A) $f'(x) = -\frac{4}{x^{3/2}} - \frac{3}{x^2} - \frac{30}{x^4}$

B) $f'(x) = -4\sqrt{x} + \frac{3}{x^2} - \frac{30}{x^4}$

C) $f'(x) = -\frac{4}{x^{3/2}} + \frac{3}{x^2} - \frac{30}{x^6}$

D) $f'(x) = \frac{4}{x^{1/2}} - \frac{3}{x^2} - \frac{30}{x^6}$

Find $f'(a)$ for the given value of a .

2) $f(x) = -x^{-5} + x^{-3}$, $a = 1$

2) _____

Find the equation of the line tangent to the graph of the function at the indicated point.

3) $f(x) = \frac{27}{x}$ at $(1, 27)$

3) _____

Find all values of x (if any) where the tangent line to the graph of the function is horizontal.

4) $y = x^3 + 2x^2 - 175x + 25$

4) _____

Differentiate.

5) $g(x) = (x^{-5} + 3)(x^{-3} + 5)$

A) $g'(x) = -8x^{-9} - 25x^{-4} - 9x^{-4}$

C) $g'(x) = -8x^{-9} - 25x^{-6} - 9x^{-2}$

B) $g'(x) = -8x^{-9} - 25x^{-6} - 9x^{-4}$

D) $g'(x) = -8x^{-7} - 25x^{-6} - 9x^{-4}$

5) _____

6) $f(x) = \sqrt[3]{x^8 + 6x}$

A) $f'(x) = \frac{1}{3}(x^8 + 6x)^{-2/3}$

C) $f'(x) = \frac{1}{3}(x^8 + 6x)^{1/2}(8x^7 + 6)$

B) $f'(x) = \frac{1}{3}(x^8 + 6x)^{-2/3}(8x^7 + 6)$

D) $f'(x) = \frac{1}{3}(8x^7 + 6)^{-2/3}$

6) _____

7) $y = (2x - 1)^3(x + 7)^{-3}$

A) $\frac{dy}{dx} = 45(2x - 1)^3(x + 7)^{-4}$

C) $\frac{dy}{dx} = 45(2x - 1)^2(x + 7)^{-4}$

B) $\frac{dy}{dx} = 45(2x - 1)^2(x + 7)^{-3}$

D) $\frac{dy}{dx} = 45(2x - 1)^3(x + 7)^{-2}$

7) _____

Find $\frac{d^2y}{dx^2}$.

8) $y = \frac{x}{x+1}$

8) _____

Find the derivative.

9) $y = \frac{8e^x}{2e^x + 1}$

9) _____

A) $\frac{8e^x}{(2e^x + 1)}$

B) $\frac{e^x}{(2e^x + 1)^2}$

C) $\frac{8e^x}{(2e^x + 1)^3}$

D) $\frac{8e^x}{(2e^x + 1)^2}$

10) $y = (e^{x^3} - 2)^4$

10) _____

11) $y = e^{x^5} \ln x$

11) _____

A) $\frac{e^{x^5} + 5e^{x^5} \ln x}{x}$

B) $\frac{e^{x^5} + 5x^5 e^{x^5} \ln x}{x}$

C) $\frac{5x^5 e^{x^5} + 1}{x}$

D) $\frac{e^{x^5} + 5x^4 e^{x^5} \ln x}{x}$

12) $f(x) = \ln(e^{6x} - 5)$

12) _____

13) $f(x) = (\ln x)^7$

13) _____

14) $f(x) = \frac{x+3}{\sqrt{x}}$, find $f'(x)$

14) _____

A) $x^{3/2} + 3\sqrt{x}$

B) $\frac{1}{\sqrt{x}} + \frac{3}{x^{3/2}}$

C) $\frac{1}{2\sqrt{x}} - \frac{3}{2x^{3/2}}$

D) $\frac{1}{2\sqrt{x}} - \frac{3}{2x}$

Give an appropriate answer.

15) If $g'(4) = -4$ and $h'(4) = -6$, find $f'(4)$ for $f(x) = -2g(x) - 2h(x) + 2$.

15) _____

Answer Key

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1) C

2) 2

3) $y = -27x + 54$

4) $-\frac{25}{3}, 7$

5) B

6) B

7) C

8) $-2(x + 1)^{-3}$

9) D

10) $12x^2e^{x^3}(e^{x^3} - 2)^3$

11) B

12) $\frac{6e^{6x}}{e^{6x} - 5}$

13) $\frac{7(\ln x)^6}{x}$

14) C

15) 20