

Worksheet #14 Derivative Review

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Use the definition $f'(a) = \lim_{h \rightarrow 0} \frac{f(a+h) - f(a)}{h}$ to find the derivative of the given function at the indicated point.

1) $f(x) = -9/x$, $a = -11$

A) $\frac{9}{11}$

B) $\frac{11}{9}$

C) $\frac{121}{9}$

D) $\frac{9}{121}$

1) _____

2) $f(x) = x^3 + 6$, $a = 2$

A) -12

B) 13

C) 18

D) 12

2) _____

Find the slope of the line tangent to the curve at the given value of x.

3) $y = x^2 - 9x$; $x = -5$

A) 70

B) -10

C) -19

D) 35

3) _____

4) If $y = x^2 + 3$, find an equation of the tangent line to the graph of y at $x = 4$.

A) $y = 8x - 13$

B) $y = 8x - 29$

C) $y = 4x - 13$

D) $y = 8x - 26$

4) _____

5) Find an equation of the tangent line to the graph of $y = x - x^2$ at the point $(-2, -6)$.

A) $y = -3x - 4$

B) $y = 5x + 4$

C) $y = -3x + 4$

D) $y = -5x + 4$

5) _____

6) Find the equation of the normal line to the curve $y = 3x - 5x^2$ at the point $(-3, -54)$.

A) $x - 27y + 975 = 0$

B) $x + 33y + 1785 = 0$

C) $x - 27y + 1785 = 0$

D) $x + 33y + 975 = 0$

6) _____

Solve the problem.

7) Find dy/dx if $y = 24 - 3x$.

A) $dy/dx = 24 - 3x$

B) $dy/dx = -3x$

C) $dy/dx = -3$

D) $dy/dx = 21$

7) _____

8) Find $\frac{d}{dx}(x^2 - 1)$.

A) $x - 1$

B) $2x - 1$

C) $2x$

D) $2x^2$

8) _____

Find dy/dx .

9) $y = \frac{1}{\sqrt{7-4x}}$

A) $-\frac{2}{(7-4x)^{1/2}}$

B) $-\frac{1}{2(7-4x)^{3/2}}$

C) $\frac{1}{2}\sqrt{7-4x}$

D) $\frac{2}{(7-4x)^{3/2}}$

9) _____

next \rightarrow

10) $y = \sqrt{19x - x^7}$ 10) _____
 A) $\frac{19 - 7x^6}{2\sqrt{19x - x^7}}$ B) $\frac{1}{2\sqrt{19x - x^7}}$ C) $\frac{-7x^6}{2\sqrt{19x - x^7}}$ D) $\frac{1}{2\sqrt{19 - 7x^6}}$

11) $y = (3x - 4)(5x + 1)$ 11) _____
 A) $15x - 17$ B) $30x - 23$ C) $30x - 17$ D) $30x - 8.5$

12) $y = (6x + 3)^2$ 12) _____
 A) $72x + 36$ B) $36x + 9$ C) $36x + 18$ D) $12x + 6$

13) $y = 3x^4 + 2x^3 - 8$ 13) _____
 A) $12x^3 + 6x^2$ B) $4x^3 + 3x^2$ C) $12x^3 + 6x^2 - 7$ D) $4x^3 + 3x^2 - 7$

14) $y = \frac{1}{2}x^8 - \frac{1}{4}x^4$ 14) _____
 A) $4x^8 - x^4$ B) $4x^7 - x^3$ C) $\frac{1}{2}x^7 - \frac{1}{4}x^3$ D) $4x^9 - x^5$

15) $y = \frac{7x + 3}{6x - 2}$ 15) _____
 A) $\frac{84x + 4}{(6x - 2)^2}$ B) $-\frac{32}{(6x - 2)^2}$ C) $-\frac{32x}{(6x - 2)^2}$ D) $\frac{4}{6x - 2}$

16) $y = \frac{x^2}{6 - 8x}$ 16) _____
 A) $\frac{-24x^2 + 12x}{(6 - 8x)^2}$ B) $\frac{8x^3 - 16x^2 + 12x}{(6 - 8x)^2}$
 C) $\frac{6x}{(6 - 8x)^2}$ D) $\frac{-8x^2 + 12x}{(6 - 8x)^2}$

17) $y = 10x^{-2} + 8x^3 - 6x$ 17) _____
 A) $-20x^{-3} + 24x^2$ B) $-20x^{-1} + 24x^2 - 6$
 C) $-20x^{-1} + 24x^2$ D) $-20x^{-3} + 24x^2 - 6$

18) $y = \frac{\sqrt{x} - 8}{\sqrt{x} + 8}$ 18) _____
 A) $\frac{16}{(x + 8)\sqrt{x} - 64}$ B) $\frac{8}{\sqrt{x}(\sqrt{x} + 8)^2}$ C) $-\frac{8}{\sqrt{x}(\sqrt{x} + 8)^2}$ D) $\frac{8}{x + 8}$

next →

Find the fourth derivative of the function.

19) $y = 6x^5 - 5x^2 - 6x + 1$

A) $720x$

B) $480x^2 + 10$

C) $480x + 10$

D) $360x$

19) _____

Determine the limit by substitution.

20) $\lim_{x \rightarrow 2} (x^3 + 5x^2 - 7x + 1)$

A) 15

B) Does not exist

C) 0

D) 29

20) _____

Determine the limit algebraically, if it exists.

21) $\lim_{x \rightarrow 2} \sqrt{x - 3}$

A) 1

B) Does not exist

C) -1

D) 0

21) _____

22) $\lim_{x \rightarrow -2} \frac{x^2 - 4}{x + 2}$

A) -4

B) 1

C) -2

D) Does not exist

22) _____

Answers

- 1) D
- 2) D
- 3) C
- 4) A
- 5) B
- 6) B
- 7) C
- 8) C
- 9) D
- 10) A
- 11) C
- 12) A
- 13) A
- 14) B
- 15) B
- 16) D
- 17) D
- 18) B
- 19) A
- 20) A
- 21) B
- 22) A