

Name: Last _____, First _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**Give an appropriate answer.**

- 1) Let $\lim_{x \rightarrow 8} f(x) = 16$. Find $\lim_{x \rightarrow 8} \sqrt[4]{f(x)}$. 1) _____
- A) 4 B) 8 C) 2 D) 16

Find the limit, if it exists.

- 2) $\lim_{x \rightarrow 1} \frac{3x^2 + 7x - 2}{3x^2 - 4x - 2}$ 2) _____
- A) $-\frac{8}{3}$ B) $-\frac{7}{4}$ C) Does not exist D) 0

- 3) $\lim_{x \rightarrow \infty} \frac{9x^3 - 6x^2 + 3x}{-x^3 - 2x + 6}$ 3) _____
- A) 9 B) $\frac{3}{2}$ C) ∞ D) -9

- 4) $\lim_{x \rightarrow -4} \frac{x^2 + 9x + 20}{x + 4}$ 4) _____
- A) 72 B) 9 C) Does not exist D) 1

- 5) $\lim_{x \rightarrow -2} \frac{x^2 - 2x - 8}{x^2 + 6x + 8}$ 5) _____
- A) 3 B) 1 C) -3 D) Does not exist

- 6) $\lim_{x \rightarrow \infty} \frac{-4\sqrt{x} + x^{-1}}{2x + 2}$ 6) _____
- A) -2 B) $\frac{1}{2}$ C) 0 D) ∞

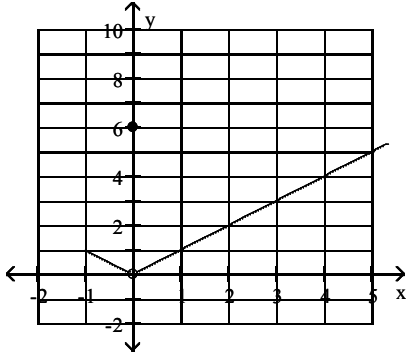
Solve the problem.

- 7) Given $f(x) = 2x^2$, $L = 8$, $x_0 = 2$, and $\varepsilon = 0.2$, find the greatest value for $\delta > 0$ such that $0 < |x - x_0| < \delta$ 7) _____
 \Rightarrow the inequality $|f(x_0) - L| < \varepsilon$ holds.
- A) 0.0248 B) 0.0252 C) 2.0248 D) 1.9748

Use the graph to evaluate the limit.

8)

8) _____



$$\lim_{x \rightarrow 0} f(x)$$

A) 0

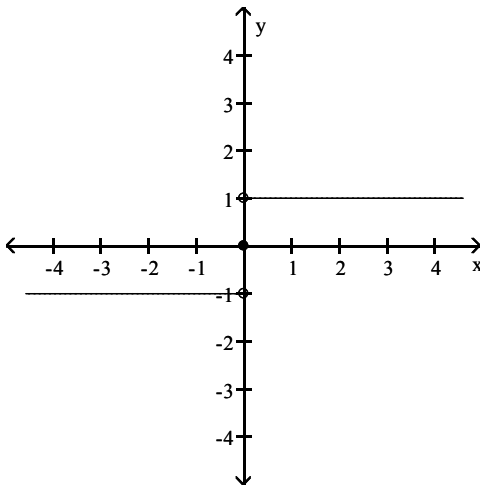
B) Does not exist

C) -1

D) 6

9) $\lim_{x \rightarrow 0} f(x)$

9) _____



A) ∞

B) 1

C) -1

D) Does not exist

Evaluate $\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$ for the given x and function f .

10) $f(x) = 3\sqrt{x}$ for $x = 9$

10) _____

A) $\frac{9}{2}$

B) $\frac{1}{2}$

C) $\frac{27}{2}$

D) Does not exist

11) $f(x) = 5x^2 - 3$ for $x = -4$

11) _____

A) -40

B) -43

C) 80

D) Does not exist

Find the limit.

12) $\lim_{x \rightarrow 0} \frac{10x - 2 \sin x}{x}$

12) _____

A) 0

B) 8

C) 12

D) Does not exist

13) $\lim_{x \rightarrow (-\pi/2)^-} \sec x$ 13) _____
 A) $-\infty$ B) ∞ C) 0 D) 1

14) $\lim_{x \rightarrow -5^-} \frac{5}{x^2 - 25}$ 14) _____
 A) 0 B) ∞ C) $-\infty$ D) -1

Find an equation of the tangent line at the given point P.

15) $y = 3x^2 + 5x - 7$, $P(-2, -5)$ 15) _____
 A) $y = \frac{1}{4}x + 1$ B) $y = -7x - 19$ C) $y = -7x + 28$ D) $y = \frac{1}{2}x - \frac{1}{2}$

Find the limit and determine if the function is continuous at the point being approached.

16) $\lim_{x \rightarrow \frac{-\pi}{2}} \cos\left(\frac{\pi}{2} \cos(\tan x)\right)$ 16) _____
 A) 1; yes B) Does not exist; no
 C) Does not exist; yes D) 1; no

17) $\lim_{\theta \rightarrow -3\pi} \tan(\sin(-3\pi \cos(\sin \theta)))$ 17) _____
 A) Does not exist; no B) 1; yes
 C) 0; yes D) 0; no

Find the average rate of change of the function over the given interval.

18) $h(t) = \sqrt{2t}$, $[2, 8]$ 18) _____
 A) $\frac{1}{3}$ B) $-\frac{3}{10}$ C) 7 D) 2

19) $h(t) = \sin(5t)$, $\left[0, \frac{\pi}{10}\right]$ 19) _____
 A) $\frac{\pi}{10}$ B) $\frac{5}{\pi}$ C) $\frac{10}{\pi}$ D) $-\frac{10}{\pi}$

Find the intervals on which the function is continuous.

20) $y = \frac{x+3}{x^2 - 6x + 8}$ 20) _____
 A) $(-\infty, -4), (-4, 2), (2, \infty)$ B) $(-\infty, -2), (-2, 4), (4, \infty)$
 C) $(-\infty, 2), (2, 4), (4, \infty)$ D) $(-\infty, 2), (2, \infty)$

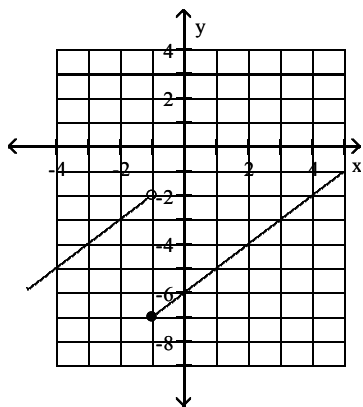
Find the limit if it exists.

21) $\lim_{x \rightarrow 9} \sqrt{8x + 62}$ 21) _____
 A) 134 B) $-\sqrt{134}$ C) $\sqrt{134}$ D) -134

Use the graph to estimate the specified limit.

22) $\lim_{x \rightarrow (-1)^-} f(x)$ and $\lim_{x \rightarrow (-1)^+} f(x)$

22) _____



A) -7; -2

B) -7; -5

C) -2; -7

D) -5; -2

Answer Key

Testname: MATH 1540 Q1-PRACTICE

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