

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**Evaluate the function at the given value of the independent variable and simplify.**

1) $f(x) = -2x + 1; f(-3)$

A) -1

B) 3

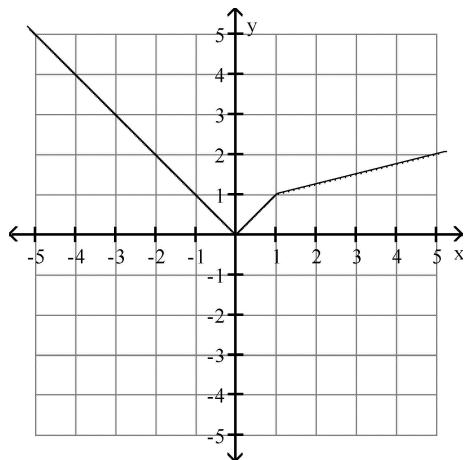
C) 7

D) 5 1) _____

Use the graph to find the indicated function value.

2) $y = f(x)$. Find $f(-2)$

2) _____



A) 1.25

B) -2

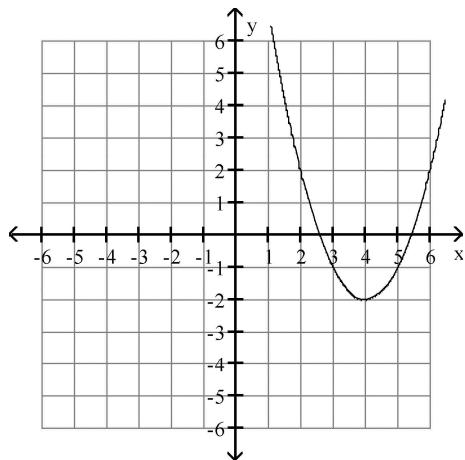
C) 5

D) 2

Use the graph to determine the function's domain and range.

3)

3) _____



A) domain: $(-\infty, \infty)$

range: $(-\infty, \infty)$

C) domain: $[4, \infty)$

range: $[-2, \infty)$

B) domain: $(-\infty, \infty)$

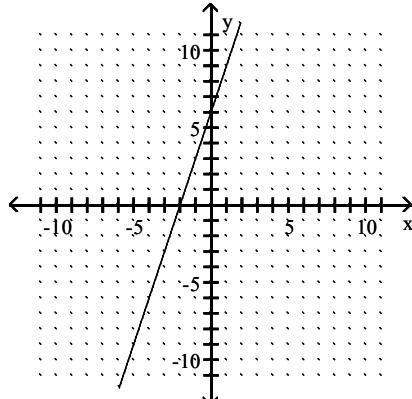
range: $[-2, \infty)$

D) domain: $(-\infty, 4) \cup (4, \infty)$

range: $(-\infty, -2) \cup (-2, \infty)$

Identify the intercepts.

4)



A) $(-2, 0), (0, -6)$

B) $(-2, 0), (0, 6)$

C) $(-6, 0), (0, 6)$

D) $(2, 0), (0, 6)$

4) _____

Determine whether the given function is even, odd, or neither.

5) $f(x) = x^3 - 2x$

A) Neither

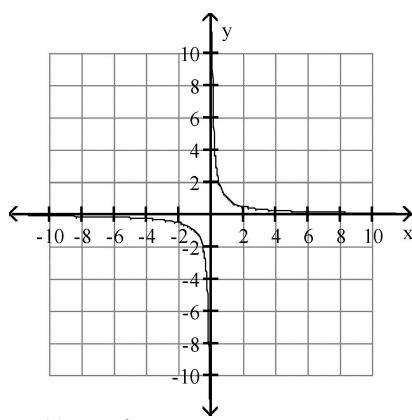
B) Even

C) Odd

5) _____

Use possible symmetry to determine whether the graph is the graph of an even function, an odd function, or a function that is neither even nor odd.

6)



A) Neither

B) Odd

C) Even

6) _____

Evaluate the piecewise function at the given value of the independent variable.

7) $f(x) = \begin{cases} 3x + 3 & \text{if } x < -4 \\ 4x + 2 & \text{if } x \geq -4 \end{cases}$; $f(-2)$

A) -6

B) -5

C) -3

D) -4

7) _____

Find and simplify the difference quotient $\frac{f(x+h) - f(x)}{h}$, $h \neq 0$ for the given function.

8) $f(x) = 6x + 7$

A) 6

B) $6 + \frac{12(x+7)}{h}$

C) 0

D) $6 + \frac{14}{h}$

8) _____

Find the slope of the line that goes through the given points.

9) $(-9, 3), (-3, -5)$

A) $-\frac{4}{3}$

B) $\frac{1}{6}$

C) $-\frac{3}{4}$

D) $\frac{4}{3}$

9) _____

Use the given conditions to write an equation for the line in point-slope form.

10) Slope = 2, passing through $(4, 2)$

A) $x - 2 = 2(y - 4)$

B) $y - 2 = 2(x - 4)$

C) $y = 2x - 6$

D) $y + 2 = 2(x + 4)$

10) _____

Find the average rate of change of the function from x_1 to x_2 .

11) $f(x) = \sqrt{2x}$ from $x_1 = 2$ to $x_2 = 8$

A) $-\frac{3}{10}$

B) 2

C) $\frac{1}{3}$

D) 7

11) _____

Find the domain of the function.

12) $\frac{x}{\sqrt{x-10}}$

A) $[10, \infty)$

B) $(-\infty, \infty)$

C) $(-\infty, 10) \cup (10, \infty)$

D) $(10, \infty)$

12) _____

For the given functions f and g , find the indicated composition.

13) $f(x) = 7x + 15, g(x) = 5x - 1$

$(f \circ g)(x)$

A) $35x + 14$

B) $35x + 8$

C) $35x + 22$

D) $35x + 74$

13) _____

Find the domain of the composite function $f \circ g$.

14) $f(x) = \frac{4}{x+8}, g(x) = x+5$

A) $(-\infty, -13)$ or $(-13, \infty)$

C) $(-\infty, \infty)$

B) $(-\infty, -8)$ or $(-8, \infty)$

D) $(-\infty, -8)$ or $(-8, -5)$ or $(-5, \infty)$

14) _____

Determine which two functions are inverses of each other.

15) $f(x) = 5x, g(x) = \frac{x}{5}, h(x) = \frac{5}{x}$

A) None

B) $f(x)$ and $g(x)$

C) $g(x)$ and $h(x)$

D) $f(x)$ and $h(x)$

15) _____

Find the inverse of the one-to-one function.

16) $f(x) = 4x - 8$

A) $f^{-1}(x) = \frac{y+8}{4}$

B) $f^{-1}(x) = \frac{4x+8}{4}$

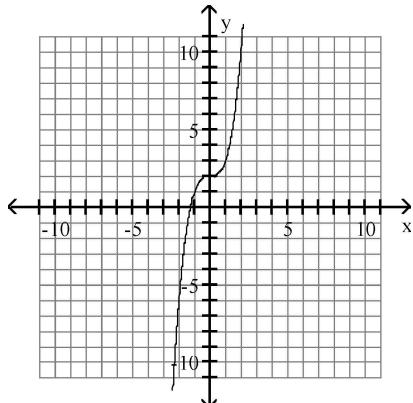
C) $f^{-1}(x) = \frac{x+8}{4}$

D) $f^{-1}(x) = \frac{x-8}{4}$

16) _____

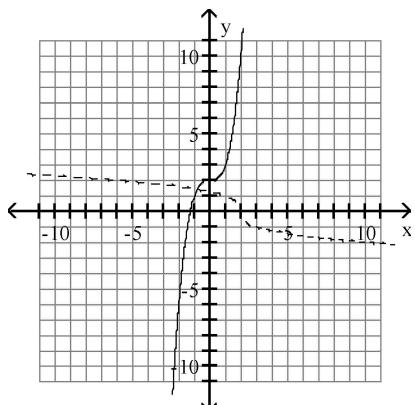
Use the graph of f to draw the graph of its inverse function.

17)

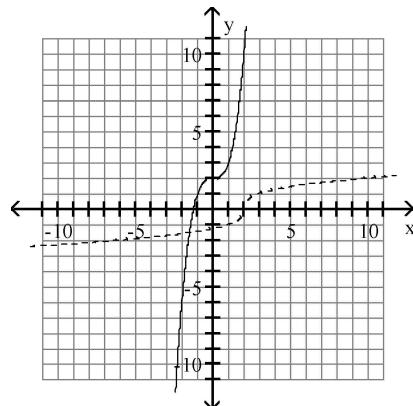


17) _____

A)



B)



Find the zeros of the polynomial function.

18) $f(x) = x^3 + x^2 - 30x$

18) _____

- A) $x = 0, x = -6, x = 5$
- C) $x = -6, x = 5$

- B) $x = 4, x = 5$
- D) $x = 0, x = 4, x = 5$

Find the domain of the rational function.

19) $f(x) = \frac{x+7}{x^2 + 4}$

19) _____

- A) $\{x | x \neq -2, x \neq 2\}$
- C) $\{x | x \neq 0, x \neq -4\}$

- B) all real numbers
- D) $\{x | x \neq -2, x \neq 2, x \neq -7\}$

Find the vertical asymptotes, if any, of the graph of the rational function.

20) $g(x) = \frac{x}{x^2 - 16}$

20) _____

- A) $x = 4$
- C) $x = 4, x = -4, x = 0$

- B) $x = 4, x = -4$
- D) no vertical asymptote

Find the horizontal asymptote, if any, of the graph of the rational function.

21) $f(x) = \frac{8x}{2x^2 + 1}$

21) _____

A) $y = \frac{1}{4}$

B) $y = 4$

C) $y = 0$

D) no horizontal asymptote

Write the equation in its equivalent exponential form.

22) $\log_5 125 = 3$

22) _____

A) $5^3 = 125$

B) $3^5 = 125$

C) $125^3 = 5$

D) $5^{125} = 3$

Write the equation in its equivalent logarithmic form.

23) $6^3 = 216$

23) _____

A) $\log_3 216 = 6$

B) $\log_6 3 = 216$

C) $\log_{216} 6 = 3$

D) $\log_6 216 = 3$

Evaluate the expression without using a calculator.

24) $\log_5 \frac{1}{25}$

24) _____

A) 10

B) 2

C) -2

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

Evaluate or simplify the expression without using a calculator.

25) $\log\left(\frac{1}{100}\right)$

25) _____

A) -2

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

C) 2

D) $\frac{1}{100}$

26) $\ln e$

26) _____

A) -1

B) e

C) 1

D) 0

Evaluate the expression without using a calculator.

27) $\ln \frac{1}{e^9}$

27) _____

A) $\frac{1}{9}$

B) $-\frac{1}{9}$

C) 9

D) -9

Solve the equation by expressing each side as a power of the same base and then equating exponents.

28) $5^x = 25$

28) _____

A) {5}

B) {1}

C) {3}

D) {2}

Solve the exponential equation. Express the solution set in terms of natural logarithms.

29) $e^{2x} = 7$

A) $\left\{ \frac{7}{2}e \right\}$

B) $\{2 \ln 7\}$

C) $\left\{ \frac{\ln 2}{7} \right\}$

D) $\left\{ \frac{\ln 7}{2} \right\}$

29) _____

Use even and odd properties of the trigonometric functions to find the exact value of the expression.

30) $\sin\left(-\frac{\pi}{3}\right)$

A) $-\frac{1}{2}$

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

C) $\frac{\sqrt{3}}{2}$

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

30) _____

31) $\cos\left(-\frac{\pi}{6}\right)$

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

B) $-\frac{\sqrt{3}}{2}$

C) $\frac{\sqrt{3}}{2}$

D) $-\frac{1}{2}$

31) _____

Use reference angles to find the exact value of the expression. Do not use a calculator.

32) $\sin\frac{-2\pi}{3}$

A) $-\frac{1}{2}$

B) -1

C) $-\frac{\sqrt{3}}{2}$

D) $\frac{\sqrt{3}}{2}$

32) _____

33) $\tan\frac{-5\pi}{6}$

A) $\sqrt{3}$

B) $\frac{\sqrt{3}}{3}$

C) $-\sqrt{3}$

D) $\frac{\sqrt{3}}{2}$

33) _____

Use a sketch to find the exact value of the expression.

34) $\cos\left(\sin^{-1}\frac{4}{5}\right)$

A) $\frac{1}{5}$

B) $\frac{3}{5}$

C) $-\frac{4}{5}$

D) $-\frac{3}{5}$

34) _____

Answer Key

Testname: 2022 CONCEPTS OF CALCULUS SUMMER PACKET

- 1) C
- 2) D
- 3) B
- 4) B
- 5) C
- 6) B
- 7) A
- 8) A
- 9) A
- 10) B
- 11) C
- 12) D
- 13) B
- 14) A
- 15) B
- 16) C
- 17) B
- 18) A
- 19) B
- 20) B
- 21) C
- 22) A
- 23) D
- 24) C
- 25) A
- 26) C
- 27) D
- 28) D
- 29) D
- 30) B
- 31) C
- 32) C
- 33) B
- 34) B