

Name:
PID

Section

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

Rationalize the denominator.

1) $\frac{1}{\sqrt{5} + 3x}$

1) _____

A) $\frac{3x\sqrt{5}}{5 - 9x^2}$

B) $\frac{3x\sqrt{5}}{5 + 9x^2}$

C) $\frac{\sqrt{5} + 3x}{5 + 9x^2}$

D) $\frac{\sqrt{5} - 3x}{5 - 9x^2}$

Find the solution set of the equation. If the equation has no solution write $\emptyset$ and if the equation is an identity so state.

2) $\frac{1}{6x + 12} + \frac{1}{30} = \frac{7}{120} - \frac{1}{4x + 8}$

2) _____

A) $\left\{\frac{44}{3}\right\}$

B) $\{44\}$

C) $\left\{-\frac{44}{3}\right\}$

D) $\emptyset$

Solve the quadratic equation.

3) $x^2 = 7 - 4x$

3) _____

A) $\{-2 \pm \sqrt{11}\}$

B) $\{2 + \sqrt{11}\}$

C) $\{-2 \pm 2\sqrt{11}\}$

D) $\{-1 \pm \sqrt{11}\}$

Solve the equation.

4) $\sqrt{28x - 28} = x + 6$

4) _____

A) $\{6\}$

B) $\{-7\}$

C) $\{-8\}$

D) $\{8\}$

Solve the problem.

- 5) A rectangular garden has dimensions of 14 feet by 9 feet. A gravel path of consistent width is to be built around the garden. How wide can the path be if there is enough gravel for 330 square feet?

5) _____

A) 7 ft

B) 5 ft

C) 7.5 ft

D) 6 ft

Solve the combined inequality. Write the solution in interval notation.

6) $-14 \leq -3x + 1 < -8$

6) _____

A) $(3, 5]$

B) $(-5, -3]$

C) $[-5, -3)$

D) $[3, 5)$

Solve the inequality. Write the solution in interval notation.

7) $x^2 - 3x - 18 < 0$

7) _____

A) $(-3, 6)$

B) $(-\infty, -3) \cup (6, \infty)$

C) $(6, \infty)$

D) $(-\infty, -3)$

8) $\frac{x - 2}{x + 4} > 0$

8) _____

A) $(-4, 2)$

B) $(-\infty, -4)$

C) $(-\infty, -4) \cup (2, \infty)$

D) $(2, \infty)$

Solve the inequality.

9) $|2x + 10| < 6$

A) $(-\infty, -8)$

C) $(-\infty, -8) \cup (-2, \infty)$

B) $(-\infty, 2)$

D) $(-8, -2)$

9) _____

Solve the problem.

10) Jim has gotten scores of 63 and 88 on his first two tests. What score must he get on his third test to keep an average of 80 or greater?

A) at least 77.0

B) at least 75.5

C) at least 89

D) at least 88

10) _____

Find an equation in slope-intercept form for the nonvertical lines. Write the vertical lines in the form $x = h$.

11) Passing through $(-7, 8)$ and $(-1, -3)$

A) $y = -\frac{15}{2}x - \frac{21}{2}$

B) $y = -\frac{11}{6}x - \frac{29}{6}$

C) $y = \frac{15}{2}x - \frac{21}{2}$

D) $y = \frac{11}{6}x - \frac{29}{6}$

11) _____

Find the function value.

12) Let $f(x) = 7x^2 - 4x + 8$. Find $f(-x)$.

A) $7x^2 + 4x + 8$

B) $-7x^2 + 4x - 8$

C) $-7x^2 + 5x + 8$

D) $6x^2 + 5x + 7$

12) _____

Find the domain of the function.

13) $f(x) = \sqrt{18 - x}$

A) $(\sqrt{18}, \infty)$

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

B) $(-\infty, 18) \cup (18, \infty)$

D) $(-\infty, 18]$

13) _____

Find the composite function for the given functions.

14) $f \circ g$ for $f(x) = \frac{3}{x-4}$ and $g(x) = \frac{2}{7x}$

A) $\frac{2x-8}{21x}$

B) $\frac{21x}{2-28x}$

C) $\frac{21x}{2+28x}$

D) $\frac{3x}{2-28x}$

14) _____

Evaluate the expression without a calculator.

15) $\log_{15} \sqrt{15}$

A) 2

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

C) -2

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

15) _____

Solve the logarithmic equation.

16) $\log_{27} \sqrt{x-3} = \frac{1}{3}$

A) 387,420,492

B) 6

C) 12

D) 143.296115

16) _____

Write the expression in expanded form.

17) $\log \frac{x^3 z}{y^2}$

A) $3 \log x + \log z - 2 \log y$

C) $3 \log x + \log z - 2 \log y$

B) $\log(3x + z) - 2 \log y$

D) $(\log x)^3 + \log z - (\log y)^2$

17) _____

Find the value of the expression without using a calculator.

18) $6^2 \log_6 3 + \log_6 2$

A) 18

B) 12

C) 6

D) 11

18) _____

Solve the logarithmic equation.

19) $\ln(5x - 1) = \ln 3 - \ln(x - 3)$

A) $3, \frac{3}{5}$

B) $\frac{16}{5}$

C) $0, \frac{16}{5}$

D) $\emptyset$

19) _____

In the problem, $P = (x, y)$ is the point on the unit circle that corresponds to the real number t . Find the exact value of the indicated trigonometric function of t .

20) $\left(\frac{3}{4}, -\frac{\sqrt{7}}{4}\right)$ Find $\cos t$.

A) $-\frac{\sqrt{7}}{4}$

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

C) $\frac{\sqrt{7}}{4}$

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

20) _____

Evaluate the trigonometric function for the given value of t .

21) $\tan t, t = \frac{7\pi}{4}$

A) -1

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

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

D) 1

21) _____

Use the given trigonometric function value of θ to find the requested trigonometric function value of the acute angle θ . Rationalize the denominators where necessary.

22) $\sin \theta = \frac{3}{10}$ Find $\cos \theta$.

A) $\frac{3}{91}$

B) $\frac{\sqrt{91}}{10}$

C) $\frac{\sqrt{91}}{3}$

D) $\frac{10}{91}$

22) _____

Use the fundamental identities and appropriate algebraic operations to simplify the expression.

23) $\sin^2 x (\cot^2 x + 1)$

A) 1

B) $\tan^2 x$

C) $\cos^2 x + 1$

D) -1

23) _____

Find the amplitude, period, or phase shift of the given function as requested.

24) Find the period of $y = -3 \sin \left[\frac{1}{4} \left(x - \frac{\pi}{2} \right) \right]$.

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

B) 3π

C) 4π

D) 8π

24) _____