

Problem 1

$$(-5)(-7) + (-16) =$$

- A. -28
- B. 51
- C. -35
- D. 19
- E. -51

Correct Answers:

- D

Problem 2

$$5\frac{1}{4} - 2\frac{2}{3} =$$

- A. $2\frac{7}{12}$
- B. $3\frac{7}{12}$
- C. 2
- D. $3\frac{5}{12}$
- E. 4

Correct Answers:

- A

Problem 3

If 7 is subtracted from 3.6, then the result is:

- A. 4.6
- B. 3.4
- C. 2.9
- D. -3.4
- E. -2.9

Correct Answers:

- D

Problem 4

Sara receives a 7% salary increase. If Sara's salary was \$14,000 before the raise, what is her new salary to the nearest dollar?

- A. \$16,000
- B. \$98,000
- C. \$980
- D. \$16,980
- E. \$2,000

Correct Answers:

- D

Problem 5

If $C = \frac{5}{9}(F - 32)$ and $F = 50$, then $C =$

- A. 18
- B. 58
- C. -4.2
- D. 32.4
- E. 10

Correct Answers:

- E

Problem 6

If $x - 3(x - 6) = 5(x + 1) - 7$, then $x =$

- A. $\frac{12}{7}$
- B. $-\frac{16}{7}$
- C. $\frac{20}{7}$
- D. $\frac{8}{7}$
- E. 0

Correct Answers:

- C

Problem 7

$(-4x)^2(3x^6) =$

- A. $48x^8$
- B. $-48x^8$
- C. $144x^{14}$
- D. $48x^{12}$
- E. $-12x^8$

Correct Answers:

- A

Problem 8

$(7x^3 - 8x^2 + 3x + 1) - (8x^3 + 7x^2 - 2) =$

- A. $-x^3 - x^2 + 3x - 1$
- B. $-x^3 - 15x^2 - 3x + 1$
- C. $15x^3 - x^2 + 3x - 1$
- D. $-x^3 - 15x^2 + 3x + 3$
- E. $-x^3 - 15x^2 + 5x + 1$

Correct Answers:

- D

Problem 9

One of the factors of $15x^2 - 7x - 2$ is:

- A. $3x + 2$
- B. $3x - 2$
- C. $3x + 1$
- D. $5x - 1$
- E. $15x - 1$

Correct Answers:

- B

Problem 10

$$\frac{x^2 - 9}{x^2 - 6x + 9} =$$

- A. $\frac{-9}{-6x+9}$
- B. 1
- C. $\frac{1}{9x}$
- D. 0
- E. $\frac{x+3}{x-3}$

Correct Answers:

- E

Problem 11

$$\frac{2x}{x^2 - 9} - \frac{1}{x + 3} =$$

- A. $x + 3$
- B. $\frac{1}{x+3}$
- C. $\frac{2x-1}{x^2-9}$
- D. $\frac{2x+1}{x^2-x-6}$
- E. $\frac{1}{x-3}$

Correct Answers:

- E

Problem 12

$$(-5)(-7) + (-16) =$$

- A. -28
- B. 51
- C. -35
- D. 19
- E. -51

Correct Answers:

- D

Problem 13

$$(-5)(-7) + (-16) =$$

- A. -28
- B. 51
- C. -35
- D. 19
- E. -51

Correct Answers:

- D

Problem 14

In the system of equations

$$\begin{cases} 2x + 3y = 7 \\ 2x - 3y = 4 \end{cases}$$

- A. $x = \frac{3}{4}$
- B. $x = \frac{11}{4}$
- C. $x = \frac{1}{2}$
- D. $x = \frac{11}{2}$
- E. $x = 11$

Correct Answers:

- B

Problem 15

$$\sqrt{25x} + 4\sqrt{x} =$$

- A. $4\sqrt{26x}$
- B. $\sqrt{29x}$
- C. $5\sqrt{26x}$
- D. $9\sqrt{x}$
- E. $\sqrt{41x}$

Correct Answers:

- D

Problem 16

$$\sqrt{44p^{12}q^8} =$$

- A. $2p^6q^4\sqrt{11}$
- B. $22p^6q^4$
- C. $2p^{10}q^6\sqrt{11}$
- D. $2p^6q^4$
- E. $22p^{12}q^8$

Correct Answers:

- A

Problem 17

The solutions of the equation $3x^2 - 7x - 6 = 0$ are:

- A. -3 and $-\frac{2}{3}$
- B. 3 and $-\frac{2}{3}$
- C. -3 and $\frac{2}{3}$
- D. 3 and -2
- E. 3 and $\frac{2}{3}$

Correct Answers:

- D

Problem 18

One of the solutions of the equation $x^2 + 2x = -5$ is:

- A. $-1 + 2i$
- B. $2i$
- C. -5
- D. -7
- E. 19

Correct Answers:

- A

Problem 19

If $y > 4$ then $|4 - y| =$

- A. $4 - y$
- B. $4 + y$
- C. $-4 + y$
- D. 0
- E. $-4 - y$

Correct Answers:

- C

Problem 20

Which of the following are factors of $x^4 - 81$?

- I. $x - 3$
- II. $x + 3$
- III. $x^2 + 9$

- A. III only
- B. I only
- C. II only
- D. I, II, and III
- E. I and II only

Correct Answers:

- D

Problem 21

If $f(x) = x^2 - 5$ and $g(x) = 3x + 1$, then $f(g(2)) =$

- A. 44
- B. -1
- C. -2
- D. -7
- E. 2

Correct Answers:

- A

Problem 22

The graph of the system of equations

$$\begin{cases} x + 2y = 1 \\ 4x - 8y = 4 \end{cases}$$

consists of:

- A. Two lines intersecting where $x = 1$.
- B. Two lines intersecting where $x = 4$.
- C. Two distinct parallel lines.
- D. Two lines intersecting where $y = 3$.
- E. One line.

Correct Answers:

- A

Problem 23

The inequality $x^2 - 5x - 6 < 0$ is equivalent to:

- A. $-1 < x < 6$
- B. $x < -1$ or $x > 6$
- C. $x < 2$ or $x > 3$
- D. $-2 < x < 3$
- E. $2 < x < 3$

Correct Answers:

- A

Problem 24

The distance between the points $(5, 2)$ and $(9, -1)$ is:

- A. 4
- B. 5
- C. 25
- D. 7
- E. $\sqrt{17}$

Correct Answers:

- B

Problem 25

The logarithmic form of $5^3 = 125$ is:

- A. $\log_5 3$
- B. $\log_3 5$
- C. $\log_{125} 5 = 3$
- D. $\log_3 125 = 5$
- E. $\log_5 125 = 3$

Correct Answers:

- D

Problem 26

Which angle measured in radians best describes the angle whose degree measure is 105° ?

- A. $\frac{5}{12}\pi$
- B. $\frac{12}{17}\pi$
- C. $\frac{19}{12}\pi$
- D. $\frac{17}{12}\pi$
- E. $\frac{7}{12}\pi$

Correct Answers:

- E

Problem 27

$\cos(90 - t)$ can be written as:

- A. $\cos(t)$
- B. $-\sin(t)$
- C. $1 - \sin(t)$
- D. $\sin(t)$
- E. $-\cos(t)$

Correct Answers:

- D

Problem 28

When the angle of inclination of the sun is 60° , the shadow cast by a tree is 12ft. How tall is the tree?

- A. 6ft
- B. 12ft
- C. $4\sqrt{3}$ ft
- D. $12\sqrt{3}$ ft
- E. $6\sqrt{2}$ ft

Correct Answers:

- D

Problem 29

If $\cos(t) = -\frac{12}{13}$ and $180 \leq t \leq 270$, then $\sin(t) =$

- A. $-\frac{5}{12}$
- B. $-\frac{1}{13}$
- C. None of these
- D. $-\frac{5}{13}$
- E. $-\frac{11}{12}$

Correct Answers:

- D

Problem 30

$\sec^2(t) \cot(t) \cos(t)$ can also be written as:

- A. $\sec(t) \sin(t)$
- B. $\csc(t)$
- C. $\cos(t)$
- D. $\sec(t)$
- E. $\tan(t)$

Correct Answers:

- D

Problem 31

If $0 < t < 90$ and $\cos(t) = \frac{4}{5}$, then $\cos(2t) =$

- A. $\frac{3}{5}$
- B. $\frac{1}{5}$
- C. $\frac{24}{25}$
- D. $\frac{7}{25}$
- E. $\frac{1}{25}$

Correct Answers:

- D

Problem 32

The equation of a line passing through $2, -1$ and perpendicular to $2x + y - 3 = 0$ can be written as:

- A. $x + 2y = 0$
- B. $2x - y - 5 = 0$
- C. $x - 2y - 1 = 0$
- D. $x - 2y - 4 = 0$
- E. $2x + y - 3 = 0$

Correct Answers:

- D

Problem 33

Find the slope and y-intercept of the line passing through the points $(2, 0)$, $(3, 5)$.

- **A.** slope 1, y-intercept 2
- **B.** slope 2, y-intercept 1
- **C.** slope -1 , y-intercept 2
- **D.** slope -1 , y-intercept 1.5
- **E.** slope -1 , y-intercept 8

Correct Answers:

- A

Problem 34

Find the center C and the radius r of the circle represented by the equation $x^2 + y^2 - 8x + 16y + 55 = 0$

- **A.** $r : \sqrt{55}, C : (8, -16)$
- **B.** $r : 5, C : (-4, 8)$
- **C.** $r : 55, C : (-8, 16)$
- **D.** $r : 5, C : (4, -8)$
- **E.** $r : 25, C : (-4, 8)$

Correct Answers:

- D

Problem 35

The graph of the equation $\frac{(x-2)^2}{2} + \frac{(y+1)^2}{4} = 1$ is best described by:

- **A.** a hyperbola
- **B.** the point $(2, 1)$
- **C.** a parabola
- **D.** an ellipse
- **E.** a circle

Correct Answers:

- D

Problem 36

Using the properties of the log function, the expression $3 \log(2x) - 2 \log(2x^2)$ can be written as:

- **A.** $\log(6x - 4x^2)$
- **B.** $\log\left(\frac{2}{x}\right)$
- **C.** $\log(2x)$
- **D.** $\frac{\log(8x^3)}{\log(4x^4)}$
- **E.** $\log \frac{3}{2x}$

Correct Answers:

- B