

College Admission

ASVAB

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Question: 1

If $x = -3$, calculate the value of the following expression.

$$3x^3 + (3x + 4) - 2x^2$$

- A. -104
- B. -58
- C. 58
- D. 104

Answer: A

Explanation:

To calculate the value of this expression, substitute -3 for x each time it appears in the expression.

$$3(-3)^3 + (3(-3) + 4) - 2(-3)^2$$

According to the order of operations, any operations inside of parentheses must be done first.

$$3(-3)^3 + (-9 + 4) - 2(-3)^2$$

$$3(-3)^3 + (-5) - 2(-3)^2$$

Then, simplify any exponents.

$$3(-27) + (-5) - 2(9)$$

Next, perform any multiplication.

$$-81 - 5 - 18$$

Finally, subtract from left to right.

$$-81 - 5 - 18 = -104$$

Question: 2

Given the following system of equations, what is the value of y ?

$$\begin{cases} 2x - 6y = 12 \\ -6x + 14y = 42 \end{cases}$$

- A. -52.5
- B. -19.5
- C. -2.44
- D. 6.56

Answer: B

Explanation:

To solve for a variable using a system of equations, one of the variables must be canceled out. To eliminate x from these equations, use the elimination method. Start by multiplying the top equation by 3.

$$\begin{array}{l} 3(2x - 6y = 12) \\ 6x - 18y = 36 \end{array}$$

Then add the two equations to eliminate x.

$$\begin{array}{r} 6x - 18y = 36 \\ + (-6x + 14y = 42) \\ \hline -4y = 78 \end{array}$$

Solve for y by dividing both sides by -4 .

$$\begin{array}{r} \frac{-4y}{-4} = \frac{78}{-4} \\ y = -19.5 \end{array}$$

Therefore, the value of y is -19.5 .

Question: 3

In the following inequality, solve for x.

$$-4x + 8 \geq 48$$

- A. $x \geq 10$
- B. $x \geq -10$
- C. $x \leq 10$
- D. $x \leq -10$

Answer: D

Explanation:

To solve for x, first isolate the variable by subtracting 8 from both sides.

$$-4x + 8 \geq 48$$

$$-4x \geq 40$$

Then, divide both sides by -4 to solve for x. When an inequality is divided by a negative number, the sign must change directions.

$$\begin{array}{r} \frac{-4x}{-4} \geq \frac{40}{-4} \\ x \leq -10 \end{array}$$

Question: 4

Which of the following lines is perpendicular to the line $y = 5x + 27$?

- A. $y = 5x + 27$
- B. $y = -\frac{x}{5} + 27$
- C. $y = \frac{x}{5} + 27$
- D. $y = -\frac{x}{5} - 27$

Answer: C

Explanation:

Lines that are perpendicular to each other have negative reciprocal slopes. The slope of the original equation is $-5x$. The negative reciprocal of this is $\frac{x}{5}$. The value of the y -intercept is not important for the purpose of answering this question. The only equation with a slope of $\frac{x}{5}$ is $y = \frac{x}{5} + 27$, so this is the correct answer.

Question: 5

Factor the following expression.

$$9x^2y - 18xy - 27y$$

- A. $9(x^2y - 2xy - 3y)$
- B. $9y(x + 3)(x + 1)$
- C. $9y(x - 3)(x + 1)$
- D. $9y(x + 3)(x - 1)$

Answer: C

Explanation:

$9y$ is contained in all parts of the expression $9x^2y - 18xy - 27y$. Therefore, $9y$ can be factored out.

$$9y(x^2 - 2x - 3)$$

$(x^2 - 2x - 3)$ can also be factored.

$$(x - 3)(x + 1)$$

The final factored form of the expression is $9y(x - 3)(x + 1)$.

Question: 6

If $x - 6 = 0$, then what is the value of x ?

- A. 0
- B. 3
- C. 6
- D. 9

Answer: C

Explanation:

To solve for x , simply add 6 to both sides.

$$\begin{aligned}
 x - 6 &= 0 \\
 x - 6 + 6 &= 0 + 6 \\
 x &= 6
 \end{aligned}$$

Question: 7

A line passes through the points (-3,18) and (5, 2). What is the slope of the line?

- A. -2
- B. $-\frac{1}{2}$
- C. $\frac{1}{2}$
- D. 2

Answer: A

Explanation:

To find the slope of the line, use the slope formula.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Substitute (-3,18) for (x_1, y_1) and (5,2) for (x_2, y_2) .

$$m = \frac{2 - 18}{5 - (-3)} = \frac{2 - 18}{5 + 3} = \frac{-16}{8} = -2$$

Therefore, the slope of the line is -2.

Question: 8

In the following inequality, solve for q.

$$-3q + 12 \geq 24q - 30$$

- A. $q \geq 6$
- B. $q = 6$
- C. $q \neq 6$
- D. $q \leq 6$

Answer: D

Explanation:

First gather the like terms on opposite sides of the equation.

$$-3q + 12 \geq 24q - 30$$

$$12 \geq 27q - 30$$

$$42 \geq 27q$$

Then, divide both sides by 27 to solve for q.

$$\frac{42}{7} \geq \frac{7q}{7}$$

$$6 \geq q$$

The inequality can be flipped to match the formatting of the answer choices, giving the inequality $q \leq 6$.

Question: 9

Chan receives a bonus from his job. He pays 30% in taxes, gives 30% to charity, and uses another 25% to pay off an old debt. He has \$600 left. What was the total amount of Chan's bonus?

- A. \$4,000
- B. \$3,600
- C. \$3,200
- D. \$3,000

Answer: A

Explanation:

Besides the \$600 he has remaining, Chan has paid out a total of 85% ($30\% + 30\% + 25\%$) of his bonus for the expenses described in the question. Therefore, the \$600 represents the remaining 15%. Remember that 15% can be written as $\frac{15}{100}$. To determine his total bonus, solve $\frac{15}{100}x = 600$. So, $x = \frac{100}{15} \times 600 = 4,000$, and Chan's total bonus is \$4,000.

Question: 10

If one side of a square has a length of 56 cm, what is its perimeter?

- A. 112 cm
- B. 224 cm
- C. 448 cm
- D. 3,136 cm

Answer: B

Explanation:

One side of a square is 56 cm. All of its sides are equal, and the perimeter is the sum of all sides.

$56 \text{ cm} + 56 \text{ cm} + 56 \text{ cm} + 56 \text{ cm} = 224 \text{ cm}$

Therefore, the perimeter is 224 cm.

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