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.

$$3(2x - 6y = 12)$$
$$6x - 18y = 36$$

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.

$$\frac{-4y}{-4} = \frac{78}{-4}$$
$$y = -19.5$$

Therefore, the value of y is —19.5.

Question: 3

In the following inequality, solve for x.
-4x + 8≥ 48

A. x ≥ 10
B. x ≥ -10
C. x ≤ 10
D. x ≤ -10

Answer: D

Explanation:
To solve for x, first isolate the variable by subtracting 8 from both sides.
-4x + 8 ≥ 48
-4x ≥ 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.

$$\frac{-4x}{-4} \geq \frac{40}{-4}$$
$$x \leq -10$$

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 = O, 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.

x - 6=0
x – 6 + 6 = 0 + 6
x = 6

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 ≥ 2 4q-30

A. q ≥6
B. q = 6
C. q ≠ 6
D. q ≤ 6

Answer: D

Explanation:
First gather the like terms on opposite sides of the equation.
-3q + 12 ≥ 4q - 30
12 ≥ 7q -30
42 ≥ 7q
Then, divide both sides by 7 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 ≤ 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 cm + 56 cm + 56 cm + 56 cm = 224 cm
Therefore, the perimeter is 224 cm.

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