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Question: 1

What is the value of $2x^2 + 5x - y^2$ when $x = 3$ and $y = 5$?

A. -4
B. 8
C. 16
D. 72

Answer: B

Explanation:
To evaluate the expression for the given values of x and y, substitute the values into the expression and then calculate the result:

$$2x^2 + 5x - y^2 = 2(3)^2 + 5(3) - (5)^2$$
$$= 2 \cdot 9 + 5 \cdot 3 - 25$$
$$= 18 + 15 - 25$$
$$= 8$$

Question: 2

$(y^2 + 9y - 2) + (4y^2 - y - 5) =$

A. $5y^2 + 8y - 7$
B. $5y^2 + 8y + 10$
C. $5y^2 + 10y - 7$
D. $5y^2 + 10y + 10$

Answer: A

Explanation:
To add quadratic expressions, combine like terms. In this problem, there are three sets of like terms: the y^2-terms, the y-terms, and the constants. Set up the addition vertically, making sure to line up like terms, and then add them together:

$y^2 + 9y - 2$

$\underline{+4y^2 - y - 5}$

$5y^2 + 8y - 7$

Question: 3

If $x^2 + 5x = 6$, then $x = ?$

A. -6 or -1
B. -6 or 1
C. -1 or 6
D. 1 or 6

Answer: B

Explanation:
The given equation is a quadratic equation that can be solved by factorization. First, move everything to one side to get it in the correct form, by subtracting 6 from both sides:

$$x^2 + 5x = 6$$

$$x^2 + 5x - 6 = 0$$

This factors out to:

$$(x + 6)(x - 1) = 0$$

Thus, the two solutions to the equation are $x = -6$ and $x = 1$.

Question: 4

What percent of 56 is 42?

A. 60%
B. 72.5%
C. 75%
D. 85%

Answer: C

Explanation:

A percent is a part divided by the whole $\left(\frac{part}{whole}\right)$. In this problem, the part is 42 and the whole is 56, so the ratio can be expressed as $\frac{42}{56}$, or 0.75:

$$\frac{42}{56} = 0.75 = 75\%$$

Question: 5

What is of 25?

A. 10
B. 11
C. 12
D. 14

Explanation:
19. D: First convert the percent to a decimal number by dividing it by 100, or, equivalently, by moving the decimal point places to the left:
56% = 0.56
Next, calculate 56% of 25 by multiplying 25 by 0.56:
0.56 x 25 = 14

Question: 6

Solve the following equation, 5(80 / 8) + (7 - 2) - (9 x 5) =

A. -150
B. 10
C. 100
D. 230

Answer: B

Explanation:

$$5 \times (80 / 8) + (7 - 2) - (9 \times 5) =$$

Remember the order of operations: Parentheses, exponents, multiplication, division, addition, subtraction.

Perform the operations inside the parentheses first:

$$5 \times (10) + (5) - (45) =$$

Then, do any multiplication and division, working from left to right:

$$50 + 5 - 45 =$$

Finally, do any adding or subtracting, working from left to right:

$$55 - 45 = 10$$

Question: 7

Solve the following equation, $\dfrac{4 - (-12)}{-9 + 5} =$

A. -8

B. -4
C. -2
D. 4

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Answer: B

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Explanation:

According to the order of operations (PEMDAS), first simplify the numerator and the denominator of the expression, then perform the division:

$$\frac{4 - (-12)}{-9 + 5} = \frac{4 + 12}{-9 + 5} = \frac{16}{-4} = -4$$

Question: 8

If $x = 2y - 3$ and $2x + \frac{1}{2}y = 3$, then $y = ?$

A. $-\frac{2}{3}$

B. 1

C. 2

D. $\frac{18}{7}$

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Answer: C

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Explanation:

The given equations form a system of linear equations. Since the first equation is already given in terms of x, it will be easier to solve it using the substitution method. Start by substituting $2y - 3$ for x in the second equation:

$$2x + \frac{1}{2}y = 3 \qquad 2(2y - 3) + \frac{1}{2}y = 3$$

Next, solve the resulting equation for y. Distribute the 2 and then combine like y-terms in the result:

$$4y - 6 + \frac{1}{2}y = 3 \qquad \frac{9}{2}y - 6 = 3$$

Finally, isolate the variable y by adding 6 to both sides and then dividing both sides by the coefficient of y, which is $\frac{9}{2}$ (or, equivalently, multiply by 2 and divide by 9):

$$\frac{9}{2}y = 9 \qquad y = 2$$

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