Answer on Question #56018 – Math – Algebra

Task 4. Which of the following is a true statement about functions.

A: If A and B are matrices, then $AB = BA$

B: If f and g are functions, then $(f \circ g)(x) = (g \circ f)(x)$

C: If f and g are functions, then $(f + g)(x) = (g + f)(x)$

D: If f is a function, then $f(a + h) = f(a) + f(h)$

Answer: C.

Task 6. Solve the system of equations below.

$$\begin{cases} 5x - 2y = 18 \\ 3x + 3y = 15 \end{cases}$$

A: (1,4)
B: (-1,4)
C: (4,1)
D: (-4,1)

Solution

Divide the second equation by 3 and then multiply by 2

$$\begin{cases} 5x - 2y = 18 \\ 3x + 3y = 15 \end{cases} \Leftrightarrow \begin{cases} 5x - 2y = 18 \\ x + y = 5 \end{cases} \Leftrightarrow \begin{cases} 5x - 2y = 18 \\ 2x + 2y = 10 \end{cases}$$

Then find the sum of these equations:

$$7x = 28 \Leftrightarrow x = 4$$

Then find y:

$$x + y = 5 \Rightarrow y = 5 - x = 5 - 1 = 4$$

Answer: C $(4; 1)$

Task 7. Find the sum of the first 50 terms of the sequence below.

$$A_n = 3n + 2$$

Solution

This is arithmetic sequence. Find its first two elements:

$$a_1 = 3 \cdot 1 + 2 = 5$$
$$a_2 = 3 \cdot 2 + 2 = 8$$

And find difference of its sequence:

$$d = a_2 - a_1 = 3$$

Use the following formula:

$$S_n = \frac{2a_1 + (n - 1)d}{2} \cdot n$$

We get:

$$S_{50} = \frac{2 \cdot 5 + (50 - 1) \cdot 3}{2} \cdot 50 = 3925$$

Answer: 3925.