How coefficients change a graph

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. What is the output at $x = 0$ for $y = 4x - 3$? [2 marks]

Substitute zero.

The result is $0 - 3$.

Answer: -3.

2. For $y = 5x + 2$, what happens to y when x increases by 1? [2 marks]

The coefficient is 5.

For example outputs 2 and 7 occur at $x = 0, 1$.

Answer: It increases by 5.

3. Describe the change from $y = 2x - 1$ to $y = 2x + 3$. [2 marks]

The multiplier is unchanged.

The constant increases by 4.

Answer: An upward shift of 4.

4. Compare $y = x + 1$ and $y = 3x + 1$ at $x = 2$ and $x = -2$. [3 marks]

Substitute into each rule independently.

The larger coefficient does not always give a larger output.

Answer: At 2: 3 and 7. At -2: -1 and -5.

5. Which of $y = 2x + 5$ and $y = -2x + 5$ decreases as x increases? [2 marks]

The multiplier is negative.

Each extra input unit reduces y by 2.

Answer: $y = -2x + 5$.

6. Explain why $y = 3x + 1$ and $y = 3x - 2$ never meet. [3 marks]

The multipliers are equal.

Their different constants prevent equality.

Answer: Their outputs remain 3 apart for the same input.