# 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 and 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.