Inverse-proportion graphs and asymptotes

6 questions | 12 marks

Equivalent correct methods earn the corresponding marks.

1. y is inversely proportional to x, with y=6 at x=4. Find its rule. [2 marks]

The constant product is 4×6=24.

Answer: $y = 24/x$

2. For $y = -18/x$, find y at x=3 and x=-6. [2 marks]

Substitute each non-zero input separately.

Answer: -6 and 3.

3. Determine whether (2,12), (3,8), (6,4) fit one inverse-proportion rule. [2 marks]

Every pair has product 24.

Answer: Yes: $y = 24/x$.

4. For $y = 5/(x + 2) - 3$, state its vertical and horizontal asymptotes. [2 marks]

The denominator vanishes at -2. As the reciprocal term approaches zero, y approaches -3.

Answer: $x = -2$ and $y = -3$.

5. A rectangular garden has fixed area 48 m². Express width w in terms of length l, and find w when l=12 m. [2 marks]

Use lw=48, then divide by positive l.

48/12=4.

Answer: $w = 48/l$, with l>0; w=4 m.

6. Explain why $y = 12 - 2x$ is not inverse proportion, even while it is positive and decreasing. [2 marks]

At x=1, y=10 and xy=10; at x=2, y=8 and xy=16.

Answer: Its product xy is not constant.