1) A line p passes through (–9, –4) and (–4, –1). Slope of a line q is \( \frac{3}{5} \). Prove that the lines p and q are parallel?

2) \( \overrightarrow{PQ} \) passes through (–1, 3) and (4, 8). \( \overrightarrow{RS} \) passes through (1, 2) and (5, 6). Are the lines parallel or perpendicular? Justify your answer.

3) A line passes through E(6, –5) and F(8, –3). Another line passes through G(5, –7) and H(10, –2). Prove that EF \( \parallel \) GH.

4) A line passes through P(–1, 3) and Q(4, 8). Another line passes through R(1, 2) and S(5, 6). Are the lines parallel or perpendicular? Justify your answer.

5) Slope of a line u is –1. A line v passes through (0, –6) and (6, 0). Are the lines u and v parallel or perpendicular? Justify.
1) A line \( p \) passes through \((-9, -4)\) and \((-4, -1)\). Slope of a line \( q \) is \( \frac{3}{5} \). Prove that the lines \( p \) and \( q \) are parallel?

\[
\text{slope of } p = \frac{3}{5} ; \text{ slope of } q = \frac{3}{5} \\
\text{slope of } p = \text{slope of } q
\]

The lines \( p \) and \( q \) are parallel.

2) \( \overrightarrow{PQ} \) passes through \((-1, 3)\) and \((4, 8)\). \( \overrightarrow{RS} \) passes through \((1, 2)\) and \((5, 6)\). Are the lines \( \overrightarrow{PQ} \) and \( \overrightarrow{RS} \) parallel or perpendicular? Justify your answer.

\[
\text{slope of } \overrightarrow{PQ} = 1 \\
\text{slope of } \overrightarrow{PQ} = \text{slope of } \overrightarrow{RS}
\]

The lines are parallel.

3) A line passes through \((-9, -4)\) and \((3, -10)\). Slope of another line is \(2\). Prove that the lines are perpendicular.

Slope of a line

Slope of another line

Product of the slopes equals to \(-1\), the lines are perpendicular.

4) A line passes through \((6, -5)\) and \((8, -3)\). Another line passes through \((5, -7)\) and \((10, -2)\). Prove that \( EF \) is parallel to \( GH \).

\[
\text{slope of } EF = 1 \\
\text{slope of } EF = \text{slope of } GH
\]

\( EF \) is parallel to \( GH \).

5) Slope of a line \( u \) is \(-1\). A line \( v \) passes through \((0, -6)\) and \((6, 0)\). Are the lines \( u \) and \( v \) parallel or perpendicular? Justify.

\[
\text{slope of } u = -1 ; \text{ slope of } v = 1 \\
\text{slope of } u \times \text{slope of } v = -1
\]

Product of their slopes equals to \(-1\), the lines \( u \) and \( v \) are perpendicular.