Part 1 spatial relation of planes and lines – exploring with cleARmaths

1. Spatial relation of lines

Scan the cleARmaths qr-code on the right of the page and decide whether the lines **intersect**, are **skew** lines, **parallel** lines or **identical** lines.

a) $g: \vec{x} = \begin{pmatrix} 1 \\ 0 \\ 3 \end{pmatrix} + t \cdot \begin{pmatrix} -2 \\ 0 \\ 6 \end{pmatrix}$, $h: \vec{x} = \begin{pmatrix} -2 \\ 5 \\ -4 \end{pmatrix} + t \cdot \begin{pmatrix} 1 \\ 0 \\ -3 \end{pmatrix}$ ....

b) $g: \vec{x} = \begin{pmatrix} -1 \\ 1 \\ 2 \end{pmatrix} + t \cdot \begin{pmatrix} 2 \\ 3 \\ 2 \end{pmatrix}$, $h: \vec{x} = \begin{pmatrix} -1 \\ 0 \\ -2 \end{pmatrix} + t \cdot \begin{pmatrix} -2 \\ 3 \\ -2 \end{pmatrix}$ ....

2. Spatial relation of planes

Scan the cleARmaths qr-code on the right of the page and decide whether the planes **intersect**, are **parallel** or **identical** planes.

a) $E_1: \vec{x} = \begin{pmatrix} 1 \\ 0 \\ 2 \end{pmatrix} + t \cdot \begin{pmatrix} -3 \\ 2 \\ -2 \end{pmatrix} + s \cdot \begin{pmatrix} -1 \\ 1 \\ 3 \end{pmatrix}$, $E_2: \vec{x} = \begin{pmatrix} 3 \\ 3 \\ -1 \end{pmatrix} + t \cdot \begin{pmatrix} 1 \\ 1 \\ -3 \end{pmatrix} + s \cdot \begin{pmatrix} 0 \\ 0 \\ 6 \end{pmatrix}$

....

b) $E_1: \vec{x} = \begin{pmatrix} -2 \\ 0 \\ -1 \end{pmatrix} + t \cdot \begin{pmatrix} 1 \\ 4 \\ -2 \end{pmatrix} + s \cdot \begin{pmatrix} 3 \\ -6 \\ 9 \end{pmatrix}$, $E_2: \vec{x} = \begin{pmatrix} 7 \\ -6 \\ 8 \end{pmatrix} + t \cdot \begin{pmatrix} -4 \\ 2 \\ -7 \end{pmatrix} + s \cdot \begin{pmatrix} -1 \\ -10 \\ 7 \end{pmatrix}$

....

cleARmaths