

Find a vector equation of the line parallel to line 4 passing through the point Q

$$(-3, 0, -1)$$

2

$$r = \begin{pmatrix} 2 \\ 3 \\ 3 \end{pmatrix} + s \begin{pmatrix} -1 \\ 3 \\ 3 \end{pmatrix}$$

Find a vector equation of the line perpendicular to line 2 passing through the point B

1

$$\left( 8 \frac{1}{3}, 3, -\frac{1}{3} \right)$$

The point  $(9, 2)$  lies on the line 2 when  $n =$

$$(1, 4, -4)$$

$$r = \begin{pmatrix} 4 \\ 1 \\ -4 \end{pmatrix} + t \begin{pmatrix} 1 \\ -1 \\ 2 \end{pmatrix}$$

Find a vector equation of the line passing through Q parallel to the line PR

$$\sqrt{3} \parallel 1$$

Find the cosine of the acute angle between line 1 and line 2

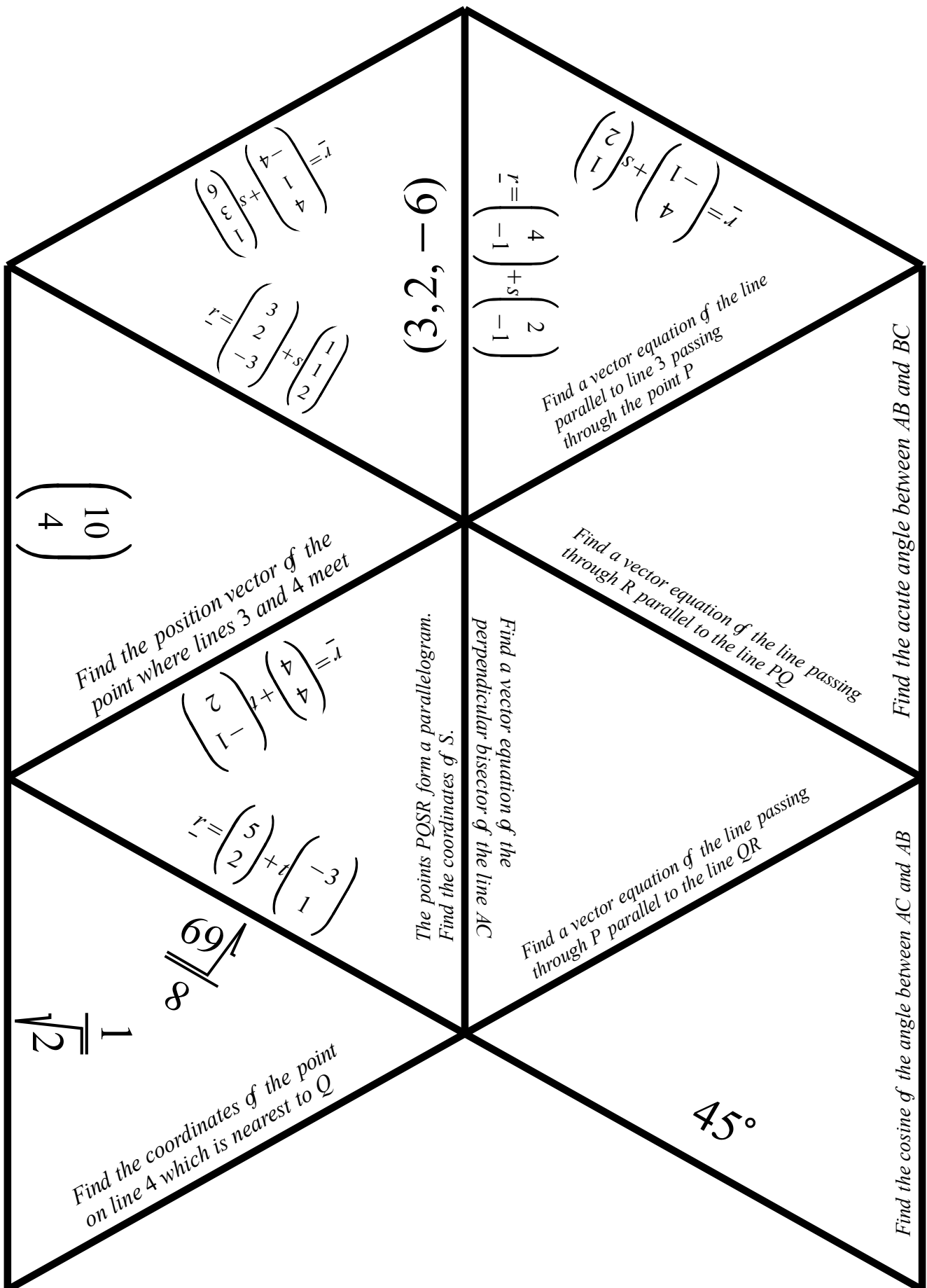
Find the cosine of the acute angle between line 3 and line 4

Find the position vector of the point where lines 1 and 2 meet  
The points PQRS form a parallelogram.  
Find the coordinates of S.

The point  $(-4, -1, -3)$  lies on the line 4 when  $n =$

Find the angle between PQ and QR

Find the cosine of the acute angle between PQ and PR



$$\begin{pmatrix} 10 \\ 4 \end{pmatrix}$$

Find the position vector of the point where lines 3 and 4 meet

$$\vec{r} = \begin{pmatrix} 4 \\ 4 \end{pmatrix} + t \begin{pmatrix} -1 \\ 2 \end{pmatrix}$$

$$\vec{r} = \begin{pmatrix} 2 \\ 3 \\ 1 \end{pmatrix} + s \begin{pmatrix} -1 \\ 2 \\ 3 \end{pmatrix}$$

$$\vec{r} = \begin{pmatrix} 4 \\ -1 \\ 4 \end{pmatrix} + s \begin{pmatrix} 6 \\ 3 \\ 1 \end{pmatrix}$$

(3, 2, -6)

The points PQSR form a parallelogram.  
Find the coordinates of S.

Find a vector equation of the line AC perpendicular bisector of the line PQ

$$\frac{69}{\sqrt{8}}$$

Find the coordinates of the point on line 4 which is nearest to Q

$$\frac{1}{\sqrt{2}}$$

45°

$$\vec{r} = \begin{pmatrix} 4 \\ -1 \\ -1 \end{pmatrix} + s \begin{pmatrix} 2 \\ -1 \\ 2 \end{pmatrix}$$

Find a vector equation of the line parallel to line 3 passing through the point P

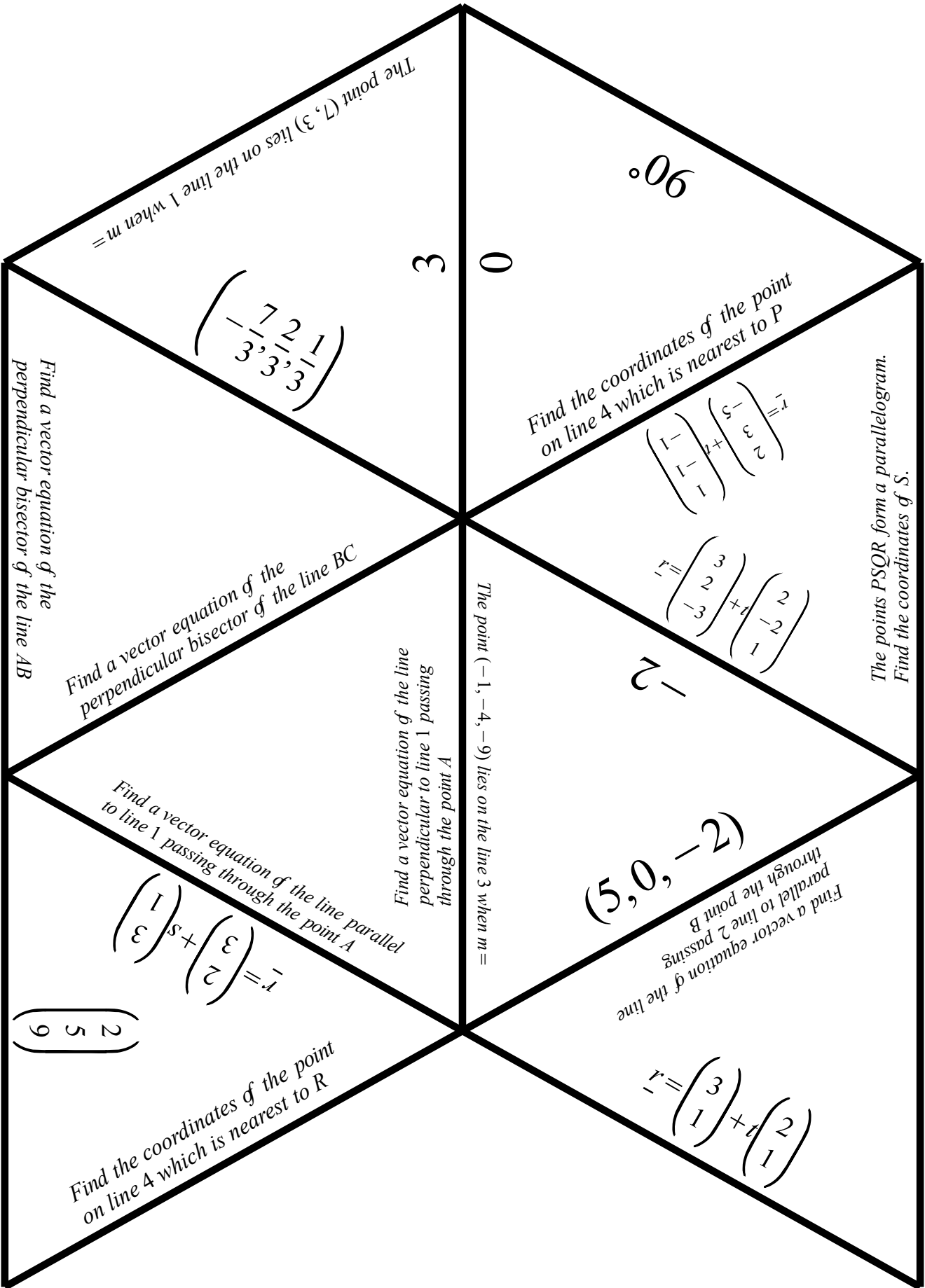
$$\vec{r} = \begin{pmatrix} 4 \\ -1 \\ 1 \end{pmatrix} + s \begin{pmatrix} 2 \\ 1 \\ 1 \end{pmatrix}$$

Find a vector equation of the line passing through R parallel to the line PQ

Find a vector equation of the line passing through P parallel to the line QR

Find the acute angle between AB and BC

Find the cosine of the angle between AC and AB



The point  $(7, 3)$  lies on the line  $l$  when  $m =$

$$\begin{pmatrix} 7 & 2 & 1 \\ -1 & 3 & 3 \\ 3 & 3 & 3 \end{pmatrix}$$

Find a vector equation of the perpendicular bisector of the line AB

Find a vector equation of the perpendicular bisector of the line BC

Find a vector equation of the line parallel to line  $l$  passing through the point A

$$r = \begin{pmatrix} 3 \\ 2 \\ 1 \end{pmatrix} + s \begin{pmatrix} 1 \\ 3 \\ 1 \end{pmatrix}$$

Find the coordinates of the point on line 4 which is nearest to R

$$\begin{pmatrix} 2 \\ 5 \\ 9 \end{pmatrix}$$

Find a vector equation of the line perpendicular to line  $l$  passing through the point A

The point  $(-1, -4, -9)$  lies on the line 3 when  $m =$

$$(5, 0, -2)$$

Find a vector equation of the line parallel to line 2 passing through the point B

$$r = \begin{pmatrix} 3 \\ 1 \\ 1 \end{pmatrix} + t \begin{pmatrix} 2 \\ 1 \\ 1 \end{pmatrix}$$

Find the coordinates of the point on line 4 which is nearest to P

$$r = \begin{pmatrix} 2 \\ 3 \\ -5 \end{pmatrix} + t \begin{pmatrix} 1 \\ -1 \\ -1 \end{pmatrix}$$

$$r = \begin{pmatrix} 2 \\ 2 \\ 3 \\ -1 \end{pmatrix} + t \begin{pmatrix} 2 \\ 1 \\ 3 \\ 1 \end{pmatrix}$$

The points  $PSQR$  form a parallelogram. Find the coordinates of S.

06

3 0

2

$$\begin{aligned} A &= (2, 3) & B &= (4, -1) & C &= (6, 5) \\ P &= (4, 1, -4) & Q &= (3, 2, -3) & R &= (2, 3, -5) \\ \text{Line 1: } \underline{r} &= (\underline{i} + \underline{j}) + m(3\underline{i} + \underline{j}) \\ \text{Line 2: } \underline{r} &= (6\underline{i} - 4\underline{j}) + n(\underline{i} + 2\underline{j}) \\ \text{Line 3: } \underline{r} &= (-\underline{j} - 3\underline{k}) + m(\underline{i} + 3\underline{j} + 6\underline{k}) \\ \text{Line 4: } \underline{r} &= (-2\underline{i} + \underline{j} + \underline{k}) + n(\underline{i} + \underline{j} + 2\underline{k}) \end{aligned}$$