Assignment 1

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Download all python codes from

https://github.com/rubeenaafreen20/EE5609/tree/master/Codes

and latex codes from

https://github.com/rubeenaafreen20/EE5609

1 Problem

A ray of light passing through the point $\begin{pmatrix}1\\2\end{pmatrix}$ reflects on the x-axis at point **A** and the reflected ray passes through the point $\begin{pmatrix}5\\3\end{pmatrix}$. Find the coordinates of **A**.

2 Explanation

Since, point **A** is on x-axis, ts y-coordinate is zero. Let point A be $\begin{pmatrix}k\\0\end{pmatrix}$
Let MA be the normal to the x-axis. In case of reflection, angle of incidence = angle of reflection

Let $\angle$QAX=θ
$\implies$ $\angle$PAX=180°-θ
Slope of line QA = tan θ
Slope of line PA = tan (180°-θ)=-tan θ
which means,
Slope of line PA=-(Slope of line QA
$$\implies \frac{-2}{k-1} = \frac{-3}{k-5}$$

3 Solution

Solving the equation:
$$\frac{-2}{k-1} = \frac{-3}{k-5}$$
we get,
$$k = \frac{13}{5}$$