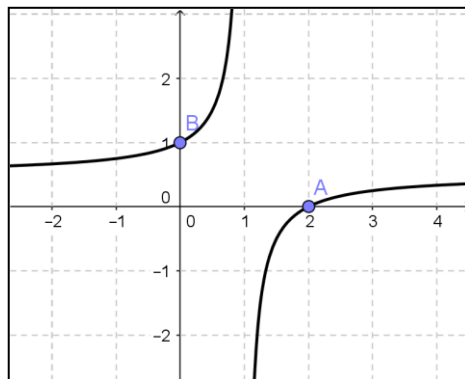


Problem Solving with GeoGebra

Construction Problems for Further Pure

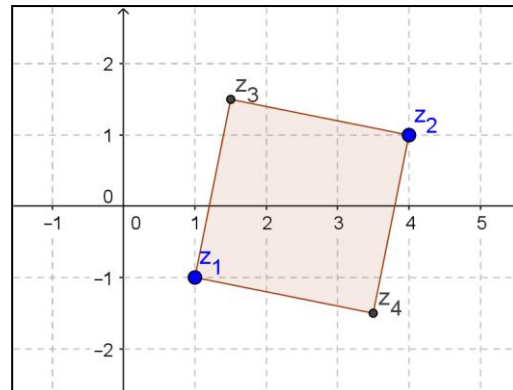
1.



Create a point A fixed to the x -axis and a point B fixed to the y -axis.

Construct a rational function that passes through A and B.

2.



Create two complex numbers z_1 and z_2 .

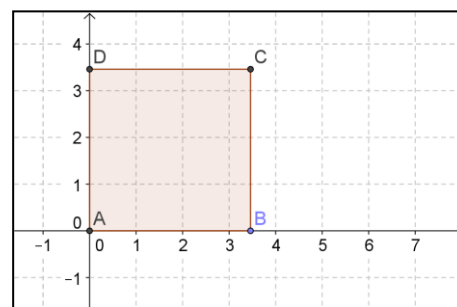
Construct complex numbers z_3 and z_4 such that the 4 points form a square in the Argand diagram with z_1 and z_2 as a diagonal.

3. Add a complex number z_1 .

Construct a cubic with real coefficients such that all it has a zero at z_1 and all three zeros of the cubic lie on the line $x = \text{Re}(z_1)$.

You might find the following GeoGebra commands useful:
 $\text{real}(z_1)$, $\text{imaginary}(z_1)$,
 $\text{ComplexRoot}[f]$

4.



Given a square with variable side (named **poly1**) find a matrix M such that the command **ApplyMatrix** $[M, \text{poly1}]$ will construct a rectangle with the same area as the square whose sides are in the ratio 2:1.