

PMath 360, Geometry, Set 3b

The far off point

Two lines $M1$ and $M2$ are given on a page. Also on the page is a point P not on either $M1$ or $M2$. The two lines might be parallel or not, but you can not tell which. Your problem is to find a straightedge (only) construction that will work in either case, $M1$ and $M2$ parallel or not) will enable you to draw a line through P , which, if extended, would pass through the far off point. Use the Theorem of Desargues in your construction. For this problem, submit a figure and a listing of the details of construction which tell how to do the job. Your details should list all the steps, in order.

Bonus question

Again consider the point P and the two lines $M1$ and $M2$. Use the Pappus Configuration to solve the problem of the far off point.

Hint: One way to approach this task is to create an independent Pappus Configuration and move the lines and points around until one point, maybe $A3$, is forced to move far off the page but the others stay on the page. Now align that figure so that $M1$ and $M2$ below match up with two lines in your figure. Use this as a model from which you create your solution. Include a detailed account of your construction.

