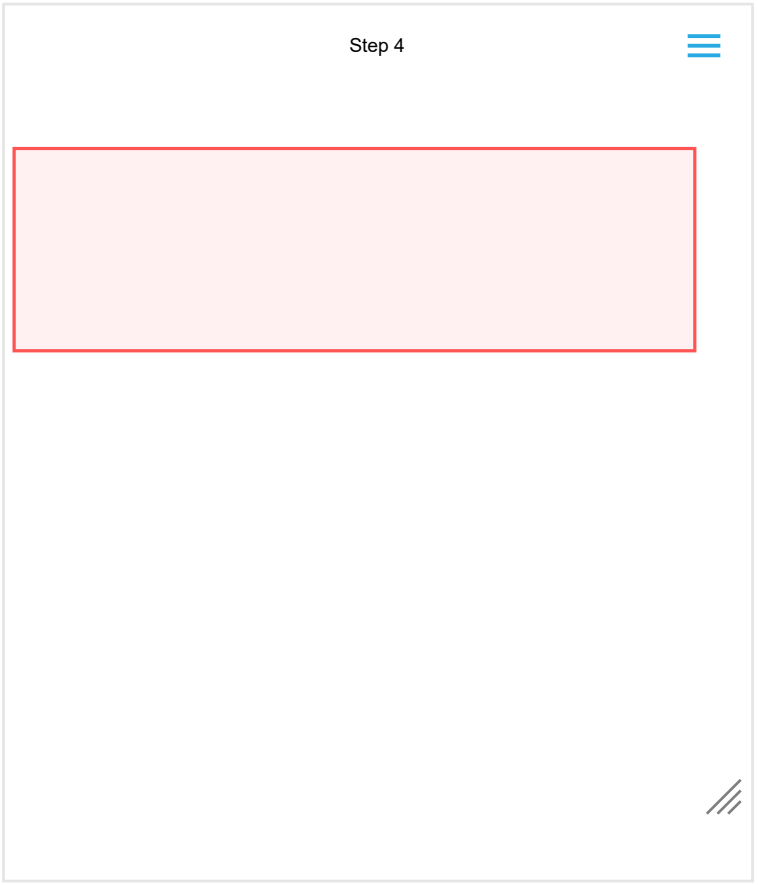
Thebault问题一

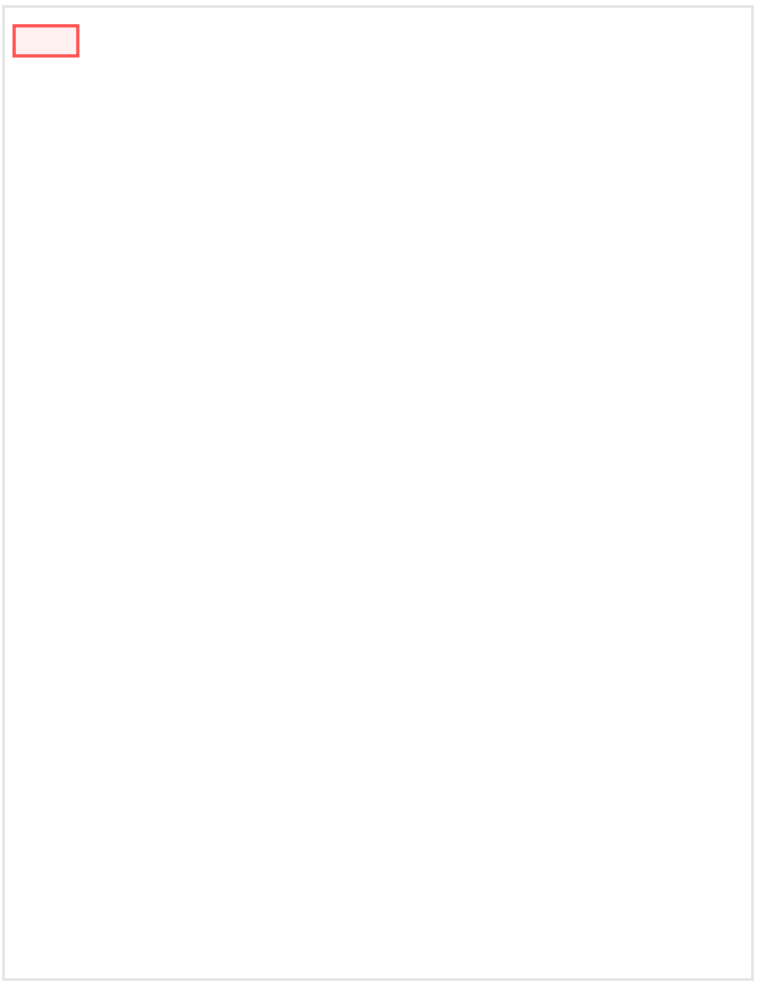
In[ ]:=
```
gs = GeometricScene[{a, a1, a2, b, b1, b2, c, c1, c2, d, d1, d2, x1, x2, x3, x4},
  {GeometricStep[GeometricAssertion[
     Style[Polygon[Style[#, Pink] & /@ {a, b, c, d}], Red], "Clockwise"]],
    GeometricStep[{p1 == Polygon[{a, b, b1, a2}],
      p2 == Polygon[{b, c, c1, b2}], p3 == Polygon[{c, d, d1, c2}],
      p4 == Polygon[{d, a, a1, d2}], Style[Point[{a1, a2, b1, b2, c1, c2, d1, d2}], Gray],
      GeometricAssertion[{p1, p2, p3, p4}, "Regular", "Counterclockwise"]}],
    GeometricStep[{Style[Point[{x1, x2, x3, x4}], Purple], x1 == RegionCentroid[p1],
      x2 == RegionCentroid[p2], x3 == RegionCentroid[p3], x4 == RegionCentroid[p4]}],
    GeometricStep[{Style[Line[{{x1, x3}, {x2, x4}}], Purple]}]},
  UnconstrainedParameters → {a, b, c, d}];
ri = RandomInstance[gs, RandomSeeding → 6]
```

Out[ ]=



In[ ]:=
```
FindGeometricConjectures[ri, GeometricAssertion[_, "Perpendicular"]]
```
找几何猜测　　几何断言

Out[ ]=



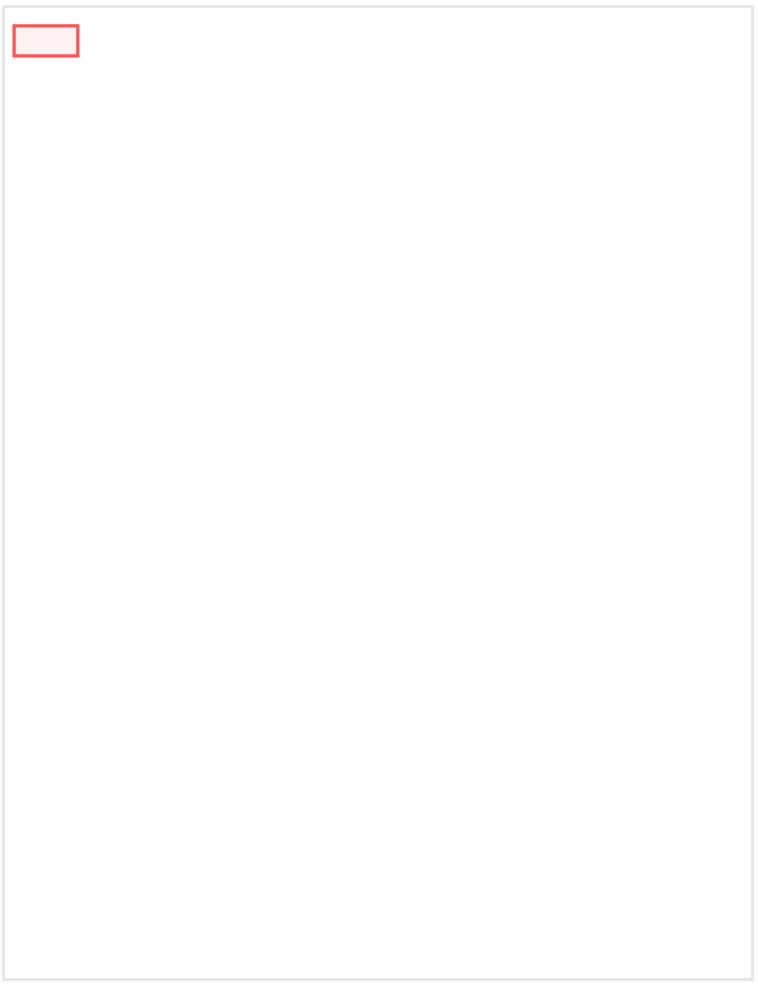
In[ ]:=
```
x1x3 ⊥ x2x4
```

Out[ ]=

x2x4 ⊥ x2x4

In[ ]:=
```
FindGeometricConjectures[ri]
```
找几何猜测

Out[ ]=

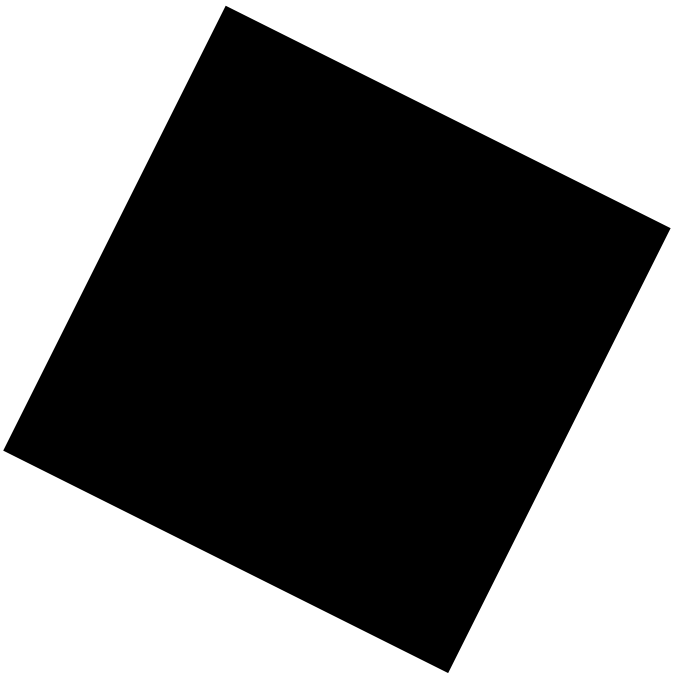


使用Graphics绘制交互式图

通过给定的两个点画出一个正方形

In[ ]:=
```
cube[a_, b_] := Parallelogram[a, {b - a, ReIm[I Complex @@ (b - a)]}]
                平行四边形                  …    ·  复数
cube[{0, 0}, {1, 2}] // Graphics
                        图形
```

Out[ ]=



In[ ]:=
```
gs = Manipulate[Graphics[{{EdgeForm[{Thick, Pink}],
     交互式操作   图形        边的格式   粗    粉色
   Transparent, ps = cube @@@ Partition[{a, b, c, d, a}, 2, 1]}, Magenta,
   透明                     划分                                品红色
  PointSize[Large], Point[{a, b, c, d}], x4 = RegionCentroid /@ ps;
  点的大小   大       点                   区域形心
  Point[x4], Line[{{x4[[1]], x4[[3]]}, {x4[[2]], x4[[4]]}}], Axes → True, PlotRange → 3],
  点         线段                                              坐标轴  真    绘制范围
 {{a, {0, 0}}, Locator}, {{b, {0.5, 2}}, Locator},
              定位器                    定位器
 {{c, {2, 1}}, Locator}, {{d, {1, 0}}, Locator}]
              定位器                   定位器
```

Out[ ]=