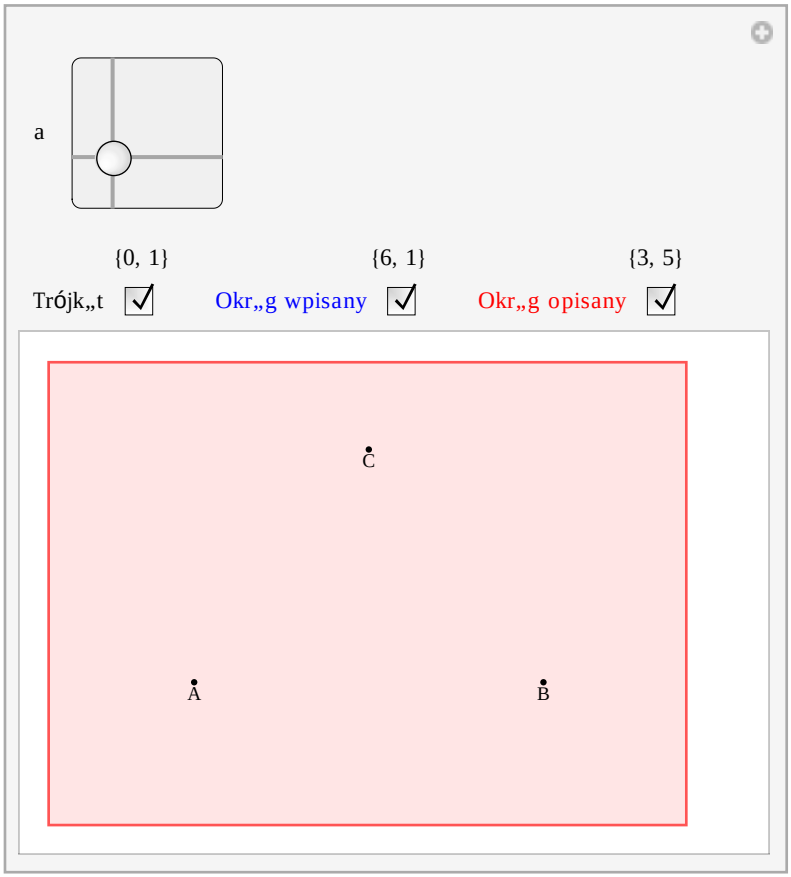
```
dl[a_, b_] := Sqrt[Plus @@ ((b - a)^2)] (* dlugosc odcinka ab *)
dlp[p_, a_] := Abs[p.Append[a, 1]] / Sqrt[p[[1]]^2 + p[[2]]^2]
(* odleglosc punktu a od prostej p *)
pr[a_, b_] := {-(a[[2]] - b[[2]]), (a[[1]] - b[[1]]), -Det[{a, b}]}
(* prosta przechodzaca przez punkty a i b *)
tr[a_, b_, c_] := dl[a, b] + dl[b, c] + dl[c, a] ≠ 2 * Max[dl[a, b], dl[b, c], dl[c, a]]
rso[a_, b_, c_] := Flatten[{x, y} /. NSolve[
      {dl[a, {x, y}]^2 == dl[b, {x, y}]^2, dl[a, {x, y}]^2 == dl[c, {x, y}]^2}, {x, y}]];
ro[a_, b_, c_] := dl[a, rso[a, b, c]];
rsw[a_, b_, c_] :=
  If[Length[Flatten[NSolve[{dlp[pr[a, b], {x, y}]^2 == dlp[pr[a, c], {x, y}]^2,
        dlp[pr[a, b], {x, y}]^2 == dlp[pr[b, c], {x, y}]^2}, {x, y}]]] > 0, Flatten[
    Select[Select[Select[Select[{x, y} /. NSolve[{dlp[pr[a, b], {x, y}]^2 == dlp[pr[a, c],
              {x, y}]^2, dlp[pr[a, b], {x, y}]^2 == dlp[pr[b, c], {x, y}]^2}, {x, y}]
        , #[[2]] < Max[Last /@ {a, b, c}] &]
       , #[[2]] > Min[Last /@ {a, b, c}] &]
      , #[[1]] > Min[First /@ {a, b, c}] &]
     , #[[1]] < Max[First /@ {a, b, c}] &]]];
rw[a_, b_, c_] := dlp[pr[a, b], rsw[a, b, c]];
Off[InverseFunction::ifun]
```

```
Manipulate[Graphics[{Point[{a, b, c}],
   Text["A", a, {0, 1}], Text["B", b, {0, 1}], Text["C", c, {0, 1}],
   If[tr[a, b, c], {
     If[Length[Cases[rso[a, b, c], _?NumberQ]] > 0 && oo,
      {Red, Point[rso[a, b, c]], Circle[rso[a, b, c], ro[a, b, c]]}, {Point[a]}],
     If[Length[Cases[rsw[a, b, c], _?NumberQ]] > 0 && ow,
      {Blue, Point[rsw[a, b, c]], Circle[rsw[a, b, c], rw[a, b, c]]}, {Point[b]}],
     If[t, Line[{a, b, c, a}], {Point[c]}], {Point[a]}]},
  PlotRange → {{-2.5, 8.5}, {-1.5, 6.5}}],
 Row[{Control[{{a, {0, 1}}, {-2, -1}, {8, 6}}],
   Control[{{b, {6, 1}}, {-2, -1}, {8, 6}}],
   Control[{{c, {3, 5}}, {-2, -1}, {8, 6}}]},
  Spacer[20], ImageSize → {342, 83}, FrameMargins → 0],
 Row[{Row[{""}, ImageSize → {0, 20}],
   Row[{Dynamic[a]}, ImageSize → {80, 20}, Alignment → Center],
   Row[{""}, ImageSize → {12, 20}],
   Row[{Dynamic[b]}, ImageSize → {80, 20}, Alignment → Center],
   Row[{""}, ImageSize → {12, 20}],
   Row[{Dynamic[c]}, ImageSize → {80, 20}, Alignment → Center]}, Spacer[10]],
 Row[{Control[{{t, True, "Trójk„t"}, {True, False}}],
   Control[{{ow, True, Style["Okr„g wpisany", Blue]}, {True, False}}],
   Control[{{oo, True, Style["Okr„g opisany", Red]}, {True, False}}]}, Spacer[20]]]
```



```
Manipulate[Graphics[{Point[{a, b, c}],
   Text["A", a, {0, 1}], Text["B", b, {0, 1}], Text["C", c, {0, 1}]
   , If[tr[a, b, c], {
     If[Length[Cases[rso[a, b, c], _?NumberQ]] > 0 && oo,
      {Red, Point[rso[a, b, c]], Circle[rso[a, b, c], ro[a, b, c]]}, {Point[a]}],
     If[Length[Cases[rsw[a, b, c], _?NumberQ]] > 0 && ow,
      {Blue, Point[rsw[a, b, c]], Circle[rsw[a, b, c], rw[a, b, c]]}, {Point[b]}],
     If[t, Line[{a, b, c, a}], {Point[c]}]}, Point[a]]
  }, PlotRange → {{-2.5, 8.5}, {-1.5, 6.5}}],
 Row[{Control[{{a, {0, 1}}, {-2, -1}, {8, 6}}],
   Control[{{b, {6, 1}}, {-2, -1}, {8, 6}}],
   Control[{{c, {3, 5}}, {-2, -1}, {8, 6}}]},
  Spacer[20], ImageSize → {342, 83}, FrameMargins → 0],
 Row[{Row[{""}, ImageSize → {0, 20}],
   Row[{Dynamic[a]}, ImageSize → {80, 20}, Alignment → Center],
   Row[{""}, ImageSize → {12, 20}],
   Row[{Dynamic[b]}, ImageSize → {80, 20}, Alignment → Center],
   Row[{""}, ImageSize → {12, 20}],
   Row[{Dynamic[c]}, ImageSize → {80, 20}, Alignment → Center]}, Spacer[10]],
 Row[
  {Row[{"Trójk„t", Checkbox[Dynamic[t], {False, True}, Enabled → Dynamic[tr[a, b, c]]]},
    Spacer[5]], Row[{Style["Okr„g wpisany", Blue],
     Checkbox[Dynamic[ow], {False, True}, Enabled → Dynamic[tr[a, b, c]]]}, Spacer[5]],
   Row[{Style["Okr„g opisany", Red], Checkbox[Dynamic[oo], {False, True},
      Enabled → Dynamic[tr[a, b, c]]]}, Spacer[5]]}, Spacer[20]]]
```