

Pensieve header: The persistent root function.

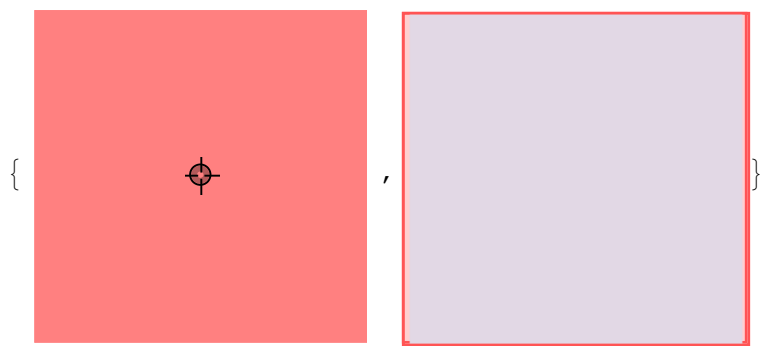
```
(*MakeExpression[RadicalBox[a_,n_], StandardForm] :=
  HoldComplete[PersistentRoot[0,ToExpression@n,ToExpression@a]];*)
MakeExpression[RadicalBox[RowBox[{p_, ":", a_}], n_], StandardForm] :=
  HoldComplete[PersistentRoot[ToExpression@p, ToExpression@n, ToExpression@a]];

{ $\sqrt[2]{9}$ ,  $\sqrt[3]{p:27}$ }
{3, PersistentRoot[p, 3, 27]}

PersistentRoot[p_, n_, a_] :=
  PersistentRoot[p, n] = If[NumberQ[PersistentRoot[p, n]],
    MinimalBy[
      N[a1/n] Table[e2πik/n, {k, n}],
      Abs[# - PersistentRoot[p, n]] &
    ][[1]],
    a1/n
  ]

 $\sqrt[3]{\text{test0}:8}$ 
2

b = {{1, 1}/2};
{LocatorPane[Dynamic[b], Graphics[{Pink, Rectangle[{-1, -1}, {1, 1}]}]},
  Dynamic[Graphics[{
    LightBlue, Rectangle[{-1, -1}, {1, 1}],
    Black, Point[r =  $\sqrt[5]{\text{test1}:b[[1, 1]} + i b[[1, 2]}$ ; {Re[r], Im[r]}],
    Red, Point[r =  $\sqrt[5]{b[[1, 1]} + i b[[1, 2]}$ ; {Re[r], Im[r]}]
  }, PlotRange -> {-1, 1}]]}
```



```

b1 = {{1, 1}/2};
{LocatorPane[Dynamic[b1], Graphics[{Pink, Rectangle[{-1, -1}, {1, 1}]}]],
Dynamic[Graphics[{LightBlue, Rectangle[{-1, -1}, {1, 1}], Black,
Point[r =  $\sqrt{\text{test2} : \text{b1}[[1, 1]] + i \text{b1}[[1, 2]]}$ ; {Re[r], Im[r]}}, PlotRange -> {-1, 1}]}]}

```

