

# WuRittSolva Tools

Standard Application Package for Wu-Ritt Process

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## Setion WRS\_I: Basic Tools for Polynomial Properties

Here the palettes.

{"MaxElementPos","MinElementPos","IsConstantsIn","PolyVariables","FixedClass","AutoClass","Class","FixedMainVariable","AutoMainVariable","MainVariable","MainVariableExponent","Initial","IsPolyReduced","LeadCoefficient","PolynomialRank","IsRankEqual","IsRankLess","IsRankGreater","intTest","orderTransform","Separant","IsCompatibleSet","IsIncompatibleSet"}

Class[■, ■, ■]
MainVariable[■, ■, ■]
MainVariableExponent[■, ■, ■]
Initial[■, ■, ■]
Separant[■, ■, ■]
LeadCoefficient[■, ■]
IsPolyReduced[■, ■, ■, ■]
PolynomialRank[■, ■, ■]
IsRankEqual[■, ■, ■, ■]
IsRankGreater[■, ■, ■, ■]
IsRankLess[■, ■, ■, ■]
IsConstantsIn[■]
IsCompatibleSet[■, ■]
IsIncompatibleSet[■, ■]

## Setion WRS\_II: Tools for Arithmetic Computation Inter Polynomials

Here the palettes.

{"PolyPRemainder","PseudoRemainder","PseudoResolution","AuxPseudoRemainder","AuxPseudoResolution","PseudoRemainderSet","PseudoResolutionSet","IsAscendingSet","SplitPolySet","MiniAscSet","BasicSet","CharacteristicSet","CharacteristicForm","WuRittEqnsSolve","Padding","TracePrintOn","MaxSteps","ZerosDecomposition"}

PseudoRemainder[■, ■, ■, ■]
PseudoResolution[■, ■, ■, ■]
AuxPseudoRemainder[■, ■, ■, ■]
AuxPseudoResolution[■, ■, ■, ■]
PseudoRemainderSet[■, ■, ■, ■]
PseudoResolutionSet[■, ■, ■, ■]
IsAscendingSet[■, ■, ■]
SplitPolySet[■, ■, ■]
BasicSet[■, ■, ■, ■]
MiniAscSet[■, ■, ■, ■]
CharacteristicSet[■, ■, ■, ■]
CharacteristicForm[■, ■, ■, ■]
WuRittEqnsSolve[■, ■, ■]
ZerosDecomposition[■, ■, ■, ■]
TracePrintOn → False
MaxSteps → 50
Padding → ■

## Setion WRS\_III: Tools for Geo2AlgLib

Here the palettes.

{ "TwoLinesParallel", "TwoLinesPerpend", "TriplePointsCollinear", "PointOnLineEqual", "PointOnLineToRatio", "TwoLinesEqual", "TwoLinesToRatio", "TripleLinesIntersect", "TwoLinesEqualRatio", "TwoAnglesEqual", "PointInAngle", "PointOnCirlce", "TwoPointsOnCircle", "ThreePointsOnCircle", "FourPointsOnCircle", "FivePointsOnCircle" }

TwoLinesParallel[{■, ■}, {■, ■}]
TwoLinesPerpend[{■, ■}, {■, ■}]
TwoLinesEqual[{■, ■}, {■, ■}]
TwoLinesToRatio[{■, ■}, {■, ■}, ■]
TwoLinesEqualRatio[{■, ■}, {■, ■}], {{■, ■}, {■, ■}}
TriplePointsCollinear[■, ■, ■]
TripleLinesIntersect[■, {{■, ■}, {■, ■}, {■, ■}}]
PointOnLineEqual[■, {■, ■}]
PointOnLineToRatio[■, {■, ■}, ■]
TwoAnglesEqual[{■, ■, ■}, {■, ■, ■}]
PointInAngle[■, {■, ■, ■}]
PointOnCirlce[■, {■, ■}]
TwoPointsOnCircle[{■, ■}, {■, ■}]
ThreePointsOnCircle[{■, ■, ■}, {■, ■}]
FourPointsOnCircle[{■, ■, ■, ■}, {■, ■}]
FivePointsOnCircle[{■, ■, ■, ■, ■}, {■, ■}]

## Setion WRS\_IV: Tools for WuRittProver

Here the palettes.

{ "IsNewComponent", "AuxProverRemainder", "WuRittProver", "WuRittSmartProver", "TraceCharacteristicSetOn", "TraceProverOn" }

IsNewComponent[■]
WuRittProver[■, ■, ■, ■]
WuRittSmartProver[■, {■, ■}, ■, ■, ■]
TraceCharacteristicSetOn → True
TraceProverOn → True

## Relevant Resources

Some resources are available for developing the WuRittSolve Tools, and these corresponding notebooks are listed below:

- [1]. Demonstration of WuRittSolve.nb
- [2]. WuRittSolve User Guide.nb
- [3]. Demonstration of WuRittSolve in Elementary Geometry.nb
- [4]. A Collection of Testing Problems.nb
- [5]. WuRittSolve for Concrete Geometric Configurations in Elementary Geometry.nb
- [6]. WuRittSolve User Manual.nb