

## Gergonne Point

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**Abstract.** By using the computer program "Machine for Questions and Answers", we find properties of the Gergonne Point.

Given a point, the Machine for Questions and Answers produces theorems related to properties of the point. The Machine for Questions and Answers produces theorems related to properties of the Gergonne Point:

Gergonne Point = Symmedian Point of the Intouch Triangle.

Gergonne Point = Mittenpunkt of the Anticomplementary Triangle.

Gergonne Point = Symmedian Point of the Pedal Triangle of the Incenter.

Gergonne Point = Mittenpunkt of the Antipedal Triangle of the Orthocenter.

Gergonne Point = Center of the Cosine Circle of the Intouch Triangle.

Gergonne Point = Center of the Cosine Circle of the Pedal Triangle of the Incenter.

Gergonne Point = Reflection of the Mittenpunkt in the Complement of the Mittenpunkt.

Gergonne Point = Product of the Centroid and the Gergonne Point.

Gergonne Point = Product of the Incenter and the Isotomic Conjugate of the Mittenpunkt.

Gergonne Point = Product of the External Center of Similitude of the Incircle and the Circumcircle and the Isotomic Conjugate of the Symmedian Point.

Gergonne Point = Product of the Isogonal Conjugate of the Mittenpunkt and the Isotomic Conjugate of the Incenter.

Gergonne Point = Internal Center of Similitude of the Inner Soddy Circle and the Outer Soddy Circle.

Gergonne Point = Internal Center of Similitude of the Outer Soddy Circle and the Radical Circle of the Lucas Circles of the Intouch Triangle.

Gergonne Point = External Center of Similitude of the Incircle and the Half-Moses Circle of

the Intouch Triangle.

Gergonne Point = Perspector of Triangle ABC and the Extouch Triangle of the Medial Triangle.

Gergonne Point = Perspector of Triangle ABC and the Symmedial Triangle of the Intouch Triangle.

Gergonne Point = Perspector of the Intouch Triangle and the Anticevian Triangle of the Gergonne Point.

Gergonne Point = Perspector of the Intouch Triangle and the Circumcevian Triangle of the Gergonne Point.

Gergonne Point = Perspector of the Anticevian Triangle of the Gergonne Point and the Pedal Triangle of the Incenter.

Gergonne Point = Perspector of the Anticevian Triangle of the Gergonne Point and the Circumcevian Triangle of the Gergonne Point.

Gergonne Point = Perspector of the Pedal Triangle of the Incenter and the Circumcevian Triangle of the Gergonne Point.

Gergonne Point = Perspector of Triangle ABC and the Stevanovic Triangle of the Orthocenters of the Triangulation triangles of the Incenter.

Gergonne Point = Perspector of Triangle ABC and the Stevanovic Triangle of the Gergonne Points of the Triangulation triangles of the Center of the Outer Soddy Circle.

Gergonne Point = Perspector of Triangle ABC and the Stevanovic Triangle of the Gergonne Points of the Triangulation triangles of the Center of the Inner Soddy Circle.

Gergonne Point = Homothetic Center of Triangle ABC and the Triangle of the Gergonne Points of the Corner Triangles of the Centroid.

Gergonne Point = Perspector of Triangle ABC and the Triangle of the Internal Centers of Similitude of the Incircles and the Circumcircles of the Corner Triangles of the Orthocenter.

Gergonne Point = Perspector of Triangle ABC and the Triangle of the reflections of the Internal Center of Similitude of the Incircle and the Circumcircle in the sides of the Excentral Triangle.

Gergonne Point = Perspector of Triangle ABC and the Triangle of the reflections of the Gergonne Point in the vertices of the Intouch Triangle.

Gergonne Point = Perspector of Triangle ABC and the Triangle of the reflections of the Gergonne Point in the vertices of the Anticevian Triangle of the Gergonne Point.

Gergonne Point = Perspector of Triangle ABC and the Triangle of the reflections of the

vertices of the Intouch Triangle in the Gergonne Point.

Gergonne Point = Perspector of Triangle ABC and the Triangle of the reflections of the vertices of the Extouch Triangle in the Mittenpunkt.

Gergonne Point = Homothetic Center of Triangle ABC and the Triangle of the reflections of the vertices of the Anticomplementary Triangle in the Mittenpunkt.

Gergonne Point = Perspector of Triangle ABC and the Triangle of the reflections of the vertices of the Anticevian Triangle of the Gergonne Point in the Gergonne Point.

Gergonne Point = Perspector of Triangle ABC and the Outer Apollonius Triangle of the Lucas Circles of the Intouch Triangle.

Gergonne Point = Perspector of Triangle ABC and the Outer Apollonius Triangle of the Lucas Circles of the Anticevian Triangle of the Gergonne Point.

Gergonne Point = Perspector of Triangle ABC and the Outer Apollonius Triangle of the Lucas Circles of the Pedal Triangle of the Incenter.

Gergonne Point = Perspector of Triangle ABC and the Outer Apollonius Triangle of the Lucas Circles of the Circumcevian Triangle of the Gergonne Point.

Gergonne Point = Anticomplement of the Mittenpunkt.

Gergonne Point = Isotomic Conjugate of the Anticomplement of the Incenter.

Gergonne Point = Cyclocevian Conjugate of the Anticomplement of the Mittenpunkt.

Gergonne Point = Isogonal Conjugate of the Internal Center of Similitude of the Incircle and the Circumcircle.

Gergonne Point = Isotomic Conjugate of the Isogonal Conjugate of the External Center of Similitude of the Incircle and the Circumcircle.

Gergonne Point = Cyclocevian Conjugate of the Isogonal Conjugate of the Internal Center of Similitude of the Incircle and the Circumcircle.

Gergonne Point = Isotomic Conjugate of the Nagel Point.

Gergonne Point = Cyclocevian Conjugate of the Isotomic Conjugate of the Nagel Point.

Gergonne Point = Cyclocevian Conjugate of the Gergonne Point.

Gergonne Point = Isogonal Conjugate of the Anticomplement of the Internal Center of Similitude of the Incircle and the Circumcircle of the Medial Triangle.

Gergonne Point = Isotomic Conjugate of the Anticomplement of the Nagel Point of the Medial Triangle.

Gergonne Point = Isotomic Conjugate of the Anticomplement of the Circumcenter of the Intouch Triangle.

Gergonne Point = Isogonal Conjugate of the Exeter Point of the Intouch Triangle.

Gergonne Point = Isotomic Conjugate of the Isogonal Conjugate of the Gibert Point of the Intouch Triangle.

Gergonne Point = Cyclocevian Conjugate of the Symmedian Point of the Intouch Triangle.

The Gergonne Point lies on the Brocard Circle of the Intouch Triangle.

The Gergonne Point lies on the Brocard Circle of the Pedal Triangle of the Incenter.

The Gergonne Point lies on the Line through the Incenter and the de Longchamps Point.

The Gergonne Point lies on the Line through the Incenter and the Outer Eppstein Point.

The Gergonne Point lies on the Line through the Incenter and the Inner Eppstein Point.

The Gergonne Point lies on the Line through the Centroid and the Mittenpunkt.

The Gergonne Point lies on the Line through the External Center of Similitude of the Incircle and the Circumcircle and the Schiffler Point.

The Gergonne Point lies on the Line through the Outer Eppstein Point and the de Longchamps Point.

The Gergonne Point lies on the Line through the Inner Eppstein Point and the de Longchamps Point.

The Gergonne Point lies on the Line through the Inner Eppstein Point and the Outer Eppstein Point.

### **Invitation**

The reader is invited to submit a note/paper containing

- synthetic proofs of theorems from this paper,
- or, applications of theorems from this paper,
- or, additional references related to this paper.

### **Definitions and Conventions**

We use the definitions and conventions in accordance with [1 - 6] and papers published in this journal.

### **The Level**

The Machine for Questions and Answers is used to produce results in this paper. Currently

the Machine has 6 levels of depths - 0,1,2,3,4,5. We use for this paper the level 0, that is, the Machine produces only elementary results. If we need deeper investigation, we have to use a level bigger than 0. Since the Machine for Questions and Answers produces too many results, it is suitable we to use bigger levels upon request, that is, for specific questions.

## References

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