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Important Formulas of Hyperbola

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List of 21 Important Formulas of Hyperbola

Important Formulas of Hyperbola

Axis of Hyperbola

1) Conjugate Axis of Hyperbola

Open Calculator

fx $2b = 2 \cdot b$

ex $24m = 2 \cdot 12m$

2) Semi Conjugate Axis of Hyperbola given Eccentricity

Open Calculator

fx $b = a \cdot \sqrt{e^2 - 1}$

ex $14.14214m = 5m \cdot \sqrt{(3m)^2 - 1}$

3) Semi Conjugate Axis of Hyperbola given Latus Rectum

Open Calculator

fx $b = \sqrt{\frac{L \cdot a}{2}}$

ex $12.24745m = \sqrt{\frac{60m \cdot 5m}{2}}$

4) Semi Transverse Axis of Hyperbola given Focal Parameter

Open Calculator

fx $$a = \frac{b}{p} \cdot \sqrt{b^2 - p^2}$$

ex $$5.231816\text{m} = \frac{12\text{m}}{11\text{m}} \cdot \sqrt{(12\text{m})^2 - (11\text{m})^2}$$

5) Semi Transverse Axis of Hyperbola given Linear Eccentricity

Open Calculator

fx $$a = \sqrt{c^2 - b^2}$$

ex $$5\text{m} = \sqrt{(13\text{m})^2 - (12\text{m})^2}$$

6) Transverse Axis of Hyperbola

Open Calculator

fx $$2a = 2 \cdot a$$

ex $$10\text{m} = 2 \cdot 5\text{m}$$

Eccentricity of Hyperbola

7) Eccentricity of Hyperbola

Open Calculator

fx $$e = \sqrt{1 + \frac{b^2}{a^2}}$$

ex $$2.6\text{m} = \sqrt{1 + \frac{(12\text{m})^2}{(5\text{m})^2}}$$

8) Eccentricity of Hyperbola given Focal Parameter

Open Calculator

fx $$e = \frac{b^2}{a \cdot p}$$

ex $$2.618182\text{m} = \frac{(12\text{m})^2}{5\text{m} \cdot 11\text{m}}$$

9) Eccentricity of Hyperbola given Latus Rectum and Semi Conjugate Axis

Open Calculator

fx $$e = \sqrt{1 + \frac{(L)^2}{(2 \cdot b)^2}}$$

ex $$2.692582\text{m} = \sqrt{1 + \frac{(60\text{m})^2}{(2 \cdot 12\text{m})^2}}$$

10) Eccentricity of Hyperbola given Linear Eccentricity and Semi Transverse Axis

Open Calculator

fx $$e = \frac{c}{a}$$

ex $$2.6\text{m} = \frac{13\text{m}}{5\text{m}}$$

Focal Parameter of Hyperbola

11) Focal Parameter of Hyperbola

Open Calculator

fx $$p = \frac{b^2}{\sqrt{a^2 + b^2}}$$

ex $$11.07692\text{m} = \frac{(12\text{m})^2}{\sqrt{(5\text{m})^2 + (12\text{m})^2}}$$

12) Focal Parameter of Hyperbola given Eccentricity and Semi Transverse Axis

Open Calculator

fx $$p = \frac{a}{e} \cdot \left(e^2 - 1\right)$$

ex $$13.33333\text{m} = \frac{5\text{m}}{3\text{m}} \cdot \left((3\text{m})^2 - 1\right)$$

13) Focal Parameter of Hyperbola given Latus Rectum and Semi Conjugate Axis

Open Calculator

fx $$p = \frac{b^2}{\sqrt{\left(\frac{2 \cdot b^2}{L}\right)^2 + b^2}}$$

ex $$11.14172\text{m} = \frac{(12\text{m})^2}{\sqrt{\left(\frac{2 \cdot (12\text{m})^2}{60\text{m}}\right)^2 + (12\text{m})^2}}$$

14) Focal Parameter of Hyperbola given Linear Eccentricity and Semi Conjugate Axis

Open Calculator

fx $$p = \frac{b^2}{c}$$

ex $$11.07692\text{m} = \frac{(12\text{m})^2}{13\text{m}}$$

Latus Rectum of Hyperbola

15) Latus Rectum of Hyperbola

Open Calculator

fx $$L = 2 \cdot \frac{b^2}{a}$$

ex $$57.6\text{m} = 2 \cdot \frac{(12\text{m})^2}{5\text{m}}$$

16) Latus Rectum of Hyperbola given Eccentricity and Semi Transverse Axis

Open Calculator

fx $$L = 2 \cdot a \cdot \left(e^2 - 1\right)$$

ex $$80\text{m} = 2 \cdot 5\text{m} \cdot \left((3\text{m})^2 - 1\right)$$

17) Latus Rectum of Hyperbola given Linear Eccentricity and Semi Conjugate Axis

Open Calculator

fx $$L = \sqrt{\frac{\left(2 \cdot b^2\right)^2}{c^2 - b^2}}$$

ex $$57.6\text{m} = \sqrt{\frac{\left(2 \cdot (12\text{m})^2\right)^2}{(13\text{m})^2 - (12\text{m})^2}}$$

18) Semi Latus Rectum of Hyperbola

Open Calculator

fx $$L_{\text{Semi}} = \frac{b^2}{a}$$

ex $$28.8\text{m} = \frac{(12\text{m})^2}{5\text{m}}$$

Linear Eccentricity of Hyperbola

19) Linear Eccentricity of Hyperbola

Open Calculator

fx $$c = \sqrt{a^2 + b^2}$$

ex $$13\text{m} = \sqrt{(5\text{m})^2 + (12\text{m})^2}$$

20) Linear Eccentricity of Hyperbola given Eccentricity and Semi Conjugate Axis

Open Calculator

fx $$c = \sqrt{\frac{b^2}{1 - \frac{1}{e^2}}}$$

ex $$12.72792\text{m} = \sqrt{\frac{(12\text{m})^2}{1 - \frac{1}{(3\text{m})^2}}}$$

21) Linear Eccentricity of Hyperbola given Latus Rectum and Semi Transverse Axis

Open Calculator

fx $$c = \sqrt{1 + \frac{L}{2 \cdot a}} \cdot a$$

ex $$13.22876\text{m} = \sqrt{1 + \frac{60\text{m}}{2 \cdot 5\text{m}}} \cdot 5\text{m}$$

Variables Used

- **2a** Transverse Axis of Hyperbola *(Meter)*
- **2b** Conjugate Axis of Hyperbola *(Meter)*
- **a** Semi Transverse Axis of Hyperbola *(Meter)*
- **b** Semi Conjugate Axis of Hyperbola *(Meter)*
- **c** Linear Eccentricity of Hyperbola *(Meter)*
- **e** Eccentricity of Hyperbola *(Meter)*
- **L** Latus Rectum of Hyperbola *(Meter)*
- L_{Semi} Semi Latus Rectum of Hyperbola *(Meter)*
- **p** Focal Parameter of Hyperbola *(Meter)*

Constants, Functions, Measurements used

- Function: **sqrt**, sqrt(Number)
  Square root function
- Measurement: **Length** in Meter (m)
  Length Unit Conversion

Check other formula lists

- Annulus Formulas
- Antiparallelogram Formulas
- Arrow Hexagon Formulas
- Astroid Formulas
- Bulge Formulas
- Cardioid Formulas
- Circular Arc Quadrangle Formulas
- Concave Pentagon Formulas
- Concave Quadrilateral Formulas
- Concave Regular Hexagon Formulas
- Concave Regular Pentagon Formulas
- Crossed Rectangle Formulas
- Cut Rectangle Formulas
- Cyclic Quadrilateral Formulas
- Cycloid Formulas
- Decagon Formulas
- Dodecagon Formulas
- Double Cycloid Formulas
- Fourstar Formulas
- Frame Formulas
- Golden Rectangle Formulas
- Grid Formulas
- H Shape Formulas
- Half Yin-Yang Formulas
- Heart Shape Formulas
- Hendecagon Formulas
- Heptagon Formulas
- Hexadecagon Formulas
- Hexagon Formulas
- Hexagram Formulas
- House Shape Formulas
- Hyperbola Formulas
- Hypocycloid Formulas
- Isosceles Trapezoid Formulas
- Koch Curve Formulas
- L Shape Formulas
- Line Formulas
- Lune Formulas
- N-gon Formulas
- Nonagon Formulas
- Octagon Formulas
- Octagram Formulas
- Open Frame Formulas
- Parallelogram Formulas
- Pentagon Formulas
- Pentagram Formulas
- Polygram Formulas
- Quadrilateral Formulas
- Quarter Circle Formulas
- Rectangle Formulas

- Rectangular Hexagon Formulas
- Regular Polygon Formulas
- Reuleaux Triangle Formulas
- Rhombus Formulas
- Right Trapezoid Formulas
- Round Corner Formulas
- Salinon Formulas
- Semicircle Formulas
- Sharp Kink Formulas
- Square Formulas
- Star of Lakshmi Formulas
- Stretched Hexagon Formulas
- T Shape Formulas
- Tangential Quadrilateral Formulas
- Trapezoid Formulas
- Tricorn Formulas
- Tri-equilateral Trapezoid Formulas
- Truncated Square Formulas
- Unicursal Hexagram Formulas
- X Shape Formulas

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