Important Formulas of Hollow Cylinder PDF

Formulas
Examples
with Units

List of 16
Important Formulas of Hollow Cylinder

1) Height of Hollow Cylinder Formulas

1.1) Height of Hollow Cylinder Formula

Evaluate Formula

Formula

$$h = \frac{CSA_{Inner}}{2 \cdot \pi \cdot r_{Inner}}$$

Example with Units

$$7.9577\,\text{m} = \frac{300\,\text{m}^2}{2 \cdot 3.1416 \cdot 6\,\text{m}}$$

1.2) Height of Hollow Cylinder given Total Surface Area Formula

Evaluate Formula

Formula

$$h = \frac{TSA}{2 \cdot \pi \cdot \left(r_{Inner} + r_{Outer} \right)} - r_{Outer} + r_{Inner}$$

Example with Units

$$7.9366\,\text{m} = \frac{1200\,\text{m}^2}{2 \cdot 3.1416 \cdot \left(6\,\text{m} + 10\,\text{m} \right)} - 10\,\text{m} + 6\,\text{m}$$

1.3) Height of Hollow Cylinder given Volume Formula

Evaluate Formula

Formula

$$h = \frac{V}{\pi \cdot \left(r_{Outer}^2 - r_{Inner}^2 \right)}$$

Example with Units

$$7.9577\,\text{m} = \frac{1600\,\text{m}^3}{3.1416 \cdot \left(10\,\text{m}^2 - 6\,\text{m}^2 \right)}$$

2) Radius of Hollow Cylinder Formulas

2.1) Inner Radius of Hollow Cylinder Formula

Evaluate Formula

Formula

$$r_{Inner} = \frac{CSA_{Inner}}{2 \cdot \pi \cdot h}$$

Example with Units

$$5.9683\,\text{m} = \frac{300\,\text{m}^2}{2 \cdot 3.1416 \cdot 8\,\text{m}}$$

2.2) Outer Radius of Hollow Cylinder Formula

Evaluate Formula

Formula

$$r_{Outer} = \frac{CSA_{Outer}}{2 \cdot \pi \cdot h}$$

Example with Units

$$9.9472\,\text{m} = \frac{500\,\text{m}^2}{2 \cdot 3.1416 \cdot 8\,\text{m}}$$

3) Surface Area of Hollow Cylinder Formulas

3.1) Inner Curved Surface Area of Hollow Cylinder Formula

Evaluate Formula

Formula

$$CSA_{Inner} = 2 \cdot \pi \cdot r_{Inner} \cdot h$$

Example with Units

$$301.5929\,m^2 = 2 \cdot 3.1416 \cdot 6\,m \cdot 8\,m$$

3.2) Outer Curved Surface Area of Hollow Cylinder Formula

Evaluate Formula

Formula

$$CSA_{Outer} = 2 \cdot \pi \cdot r_{Outer} \cdot h$$

Example with Units

$$502.6548\,m^2 = 2 \cdot 3.1416 \cdot 10\,m \cdot 8\,m$$

3.3) Total Curved Surface Area of Hollow Cylinder Formula

Evaluate Formula

Formula

$$CSA_{Total} = 2 \cdot \pi \cdot h \cdot \left(r_{Inner} + r_{Outer} \right)$$

Example with Units

$$804.2477\,m^2 = 2 \cdot 3.1416 \cdot 8\,m \cdot \left(6\,m + 10\,m \right)$$

3.4) Total Surface Area of Hollow Cylinder Formula

Evaluate Formula

Formula

$$TSA = 2 \cdot \pi \cdot \left(r_{Inner} + r_{Outer} \right) \cdot \left(r_{Outer} - r_{Inner} + h \right)$$

Example with Units

$$1206.3716\,m^2 = 2 \cdot 3.1416 \cdot \left(6\,m + 10\,m \right) \cdot \left(10\,m - 6\,m + 8\,m \right)$$

3.5) Total Surface Area of Hollow Cylinder given Wall Thickness and Inner Radius Formula

Evaluate Formula

Formula

$$TSA = 2 \cdot \pi \cdot \left(t_{Wall} + \left(2 \cdot r_{Inner} \right) \right) \cdot \left(t_{Wall} + h \right)$$

Example with Units

$$1206.3716\,m^2 = 2 \cdot 3.1416 \cdot \left(4\,m + \left(2 \cdot 6\,m \right) \right) \cdot \left(4\,m + 8\,m \right)$$

4) Volume of Hollow Cylinder Formulas

4.1) Volume of Hollow Cylinder Formula

Evaluate Formula

Formula

$$V = \pi \cdot h \cdot \left(r_{Outer}^2 - r_{Inner}^2 \right)$$

Example with Units

$$1608.4954\,m^3 = 3.1416 \cdot 8\,m \cdot \left(10\,m^2 - 6\,m^2 \right)$$

4.2) Volume of Hollow Cylinder given Total Surface Area Formula

Evaluate Formula

Formula

$$V = \pi \cdot \left(\frac{TSA}{2 \cdot \pi \cdot \left(r_{Inner} + r_{Outer} \right)} - r_{Outer} + r_{Inner} \right) \cdot \left(r_{Outer}^2 - r_{Inner}^2 \right)$$

Example with Units

$$1595.7523\,m^3 = 3.1416 \cdot \left(\frac{1200\,m^2}{2 \cdot 3.1416 \cdot \left(6\,m + 10\,m \right)} - 10\,m + 6\,m \right) \cdot \left(10\,m^2 - 6\,m^2 \right)$$

4.3) Volume of Hollow Cylinder given Wall Thickness and Outer Radius Formula

Evaluate Formula

Formula

$$V = \pi \cdot h \cdot \left(r_{Outer}^2 - \left(r_{Outer} - t_{Wall} \right)^2 \right)$$

Example with Units

$$1608.4954\,m^3 = 3.1416 \cdot 8\,m \cdot \left(10\,m^2 - \left(10\,m - 4\,m \right)^2 \right)$$

5) Wall Thickness of Hollow Cylinder Formulas

5.1) Wall Thickness of Hollow Cylinder Formula

Evaluate Formula

Formula

$$t_{Wall} = r_{Outer} - r_{Inner}$$

Example with Units

$$4\,m = 10\,m - 6\,m$$

5.2) Wall Thickness of Hollow Cylinder given Total Curved Surface Area and Inner Radius Formula

Evaluate Formula

Formula

$$t_{Wall} = \frac{CSA_{Total}}{2 \cdot \pi \cdot h} - \left(2 \cdot r_{Inner} \right)$$

Example with Units

$$3.9155\,m = \frac{800\,m^2}{2 \cdot 3.1416 \cdot 8\,m} - \left(2 \cdot 6\,m \right)$$

5.3) Wall Thickness of Hollow Cylinder given Volume and Inner Radius Formula

Evaluate Formula

Formula

$$t_{Wall} = \sqrt{\frac{V}{\pi \cdot h} + r_{Inner}^2} - r_{Inner}$$

Example with Units

$$3.9831\,m = \sqrt{\frac{1600\,m^3}{3.1416 \cdot 8\,m} + 6\,m^2} - 6\,m$$

Variables used in list of Important Formulas of Hollow Cylinder above

- CSA_{Inner} Inner Curved Surface Area of Hollow Cylinder *(Square Meter)*
- CSA_{Outer} Outer Curved Surface Area of Hollow Cylinder *(Square Meter)*
- CSA_{Total} Total Curved Surface Area of Hollow Cylinder *(Square Meter)*
- **h** Height of Hollow Cylinder *(Meter)*
- r_{Inner} Inner Radius of Hollow Cylinder *(Meter)*
- r_{Outer} Outer Radius of Hollow Cylinder *(Meter)*
- t_{Wall} Wall Thickness of Hollow Cylinder *(Meter)*
- **TSA** Total Surface Area of Hollow Cylinder *(Square Meter)*
- **V** Volume of Hollow Cylinder *(Cubic Meter)*

Constants, Functions, Measurements used in list of Important Formulas of Hollow Cylinder above

- constant(s): **pi**, 3.14159265358979323846264338327950288 *Archimedes' constant*
- Functions: **sqrt**, sqrt(Number) *A square root function is a function that takes a non-negative number as an input and returns the square root of the given input number.*
- Measurement: **Length** in Meter (m) *Length Unit Conversion*
- Measurement: **Volume** in Cubic Meter (m^3) *Volume Unit Conversion*
- Measurement: **Area** in Square Meter (m^2) *Area Unit Conversion*

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- Important Hollow Cuboid Formulas
- Important Hollow Cylinder Formulas
- Important Hollow Frustum Formulas
- Important Hollow Hemisphere Formulas
- Important Hollow Pyramid Formulas
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- Important Skewed Three Edged Prism Formulas

- Important Small Stellated Dodecahedron Formulas
- Important Solid of Revolution Formulas
- Important Sphere Formulas
- Important Spherical Cap Formulas
- Important Spherical Corner Formulas
- Important Spherical Ring Formulas
- Important Spherical Sector Formulas
- Important Spherical Segment Formulas
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