calculatoratoz.com

unitsconverters.com

Important Formulas of Cylindrical Shell

Calculators! Examples! Conversions!

Bookmark **calculatoratoz.com**, **unitsconverters.com**

Widest Coverage of Calculators and Growing - **30,000+ Calculators!**
Calculate With a Different Unit for Each Variable - **In built Unit Conversion!**
Widest Collection of Measurements and Units - **250+ Measurements!**

Feel free to SHARE this document with your friends!

Please leave your feedback here...

List of 14 Important Formulas of Cylindrical Shell

Important Formulas of Cylindrical Shell

1) Height of Cylindrical Shell given Lateral Surface Area

Open Calculator

fx $$h = \frac{LSA}{2 \cdot \pi \cdot (r_{Outer} + r_{Inner})}$$

ex $$4.961889\text{m} = \frac{530\text{m}^2}{2 \cdot \pi \cdot (10\text{m} + 7\text{m})}$$

2) Height of Cylindrical Shell given Volume

Open Calculator

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

ex $$4.993096\text{m} = \frac{800\text{m}^3}{\pi \cdot \left((10\text{m})^2 - (7\text{m})^2\right)}$$

3) Inner Radius of Cylindrical Shell

Open Calculator

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

ex $$7\text{m} = 10\text{m} - 3\text{m}$$

4) Inner Radius of Cylindrical Shell given Lateral Surface Area

Open Calculator

fx $$r_{Inner} = \frac{LSA}{2 \cdot \pi \cdot h} - r_{Outer}$$

ex $$6.870424\text{m} = \frac{530\text{m}^2}{2 \cdot \pi \cdot 5\text{m}} - 10\text{m}$$

5) Lateral Surface Area of Cylindrical Shell

Open Calculator

fx $$LSA = 2 \cdot \pi \cdot h \cdot (r_{Outer} + r_{Inner})$$

ex $$534.0708\text{m}^2 = 2 \cdot \pi \cdot 5\text{m} \cdot (10\text{m} + 7\text{m})$$

6) Outer Radius of Cylindrical Shell

Open Calculator

fx $$r_{Outer} = t_{Wall} + r_{Inner}$$

ex $$10\text{m} = 3\text{m} + 7\text{m}$$

7) Outer Radius of Cylindrical Shell given Lateral Surface Area

Open Calculator

fx $$r_{Outer} = \frac{LSA}{2 \cdot \pi \cdot h} - r_{Inner}$$

ex $$9.870424\text{m} = \frac{530\text{m}^2}{2 \cdot \pi \cdot 5\text{m}} - 7\text{m}$$

8) Total Surface Area of Cylindrical Shell

Open Calculator

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

ex $854.5132m^2 = 2 \cdot \pi \cdot (10m + 7m) \cdot (10m - 7m + 5m)$

9) Total Surface Area of Cylindrical Shell given Wall Thickness and Outer Radius

Open Calculator

$$TSA = 2 \cdot \pi \cdot ((2 \cdot r_{Outer}) - t_{Wall}) \cdot (t_{Wall} + h)$$

ex $854.5132m^2 = 2 \cdot \pi \cdot ((2 \cdot 10m) - 3m) \cdot (3m + 5m)$

10) Volume of Cylindrical Shell

Open Calculator

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

ex $801.1061m^3 = \pi \cdot 5m \cdot \left((10m)^2 - (7m)^2\right)$

11) Volume of Cylindrical Shell given Wall Thickness and Inner Radius

Open Calculator

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

ex $801.1061m^3 = \pi \cdot 5m \cdot \left((3m + 7m)^2 - (7m)^2\right)$

12) Volume of Cylindrical Shell given Wall Thickness and Outer Radius

Open Calculator

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

ex $$801.1061\text{m}^3 = \pi \cdot 5\text{m} \cdot \left((10\text{m})^2 - (10\text{m} - 3\text{m})^2 \right)$$

13) Wall Thickness of Cylindrical Shell

Open Calculator

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

ex $$3\text{m} = 10\text{m} - 7\text{m}$$

14) Wall Thickness of Cylindrical Shell given Volume and Inner Radius

Open Calculator

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

ex $$2.996478\text{m} = \sqrt{\frac{800\text{m}^3}{\pi \cdot 5\text{m}} + (7\text{m})^2} - 7\text{m}$$

Variables Used

- **h** Height of Cylindrical Shell *(Meter)*
- **LSA** Lateral Surface Area of Cylindrical Shell *(Square Meter)*
- r_{Inner} Inner Radius of Cylindrical Shell *(Meter)*
- r_{Outer} Outer Radius of Cylindrical Shell *(Meter)*
- t_{Wall} Wall Thickness of Cylindrical Shell *(Meter)*
- **TSA** Total Surface Area of Cylindrical Shell *(Square Meter)*
- **V** Volume of Cylindrical Shell *(Cubic Meter)*

Constants, Functions, Measurements used

- Constant: **pi**, 3.14159265358979323846264338327950288
  Archimedes' constant
- Function: **sqrt**, sqrt(Number)
  Square root function
- 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

Check other formula lists

- Anticube Formulas
- Antiprism Formulas
- Barrel Formulas
- Bent Cuboid Formulas
- Bicone Formulas
- Capsule Formulas
- Circular Hyperboloid Formulas
- Cuboctahedron Formulas
- Cut Cylinder Formulas
- Cut Cylindrical Shell Formulas
- Cylinder Formulas
- Cylindrical Shell Formulas
- Diagonally Halved Cylinder Formulas
- Disphenoid Formulas
- Double Calotte Formulas
- Double Point Formulas
- Ellipsoid Formulas
- Elliptic Cylinder Formulas
- Elongated Dodecahedron Formulas
- Flat End Cylinder Formulas
- Frustum of Cone Formulas
- Great Dodecahedron Formulas
- Great Icosahedron Formulas
- Great Stellated Dodecahedron Formulas
- Half Cylinder Formulas
- Half Tetrahedron Formulas
- Hemisphere Formulas
- Hollow Cuboid Formulas
- Hollow Cylinder Formulas
- Hollow Frustum Formulas
- Hollow Hemisphere Formulas
- Hollow Pyramid Formulas
- Hollow Sphere Formulas
- Ingot Formulas
- Obelisk Formulas
- Oblique Cylinder Formulas
- Oblique Prism Formulas
- Obtuse Edged Cuboid Formulas
- Oloid Formulas
- Paraboloid Formulas
- Parallelepiped Formulas
- Prismatoid Formulas
- Ramp Formulas
- Regular Bipyramid Formulas
- Rhombohedron Formulas
- Right Wedge Formulas
- Semi Ellipsoid Formulas
- Sharp Bent Cylinder Formulas
- Skewed Three Edged Prism Formulas

- Small Stellated Dodecahedron Formulas
- Solid of Revolution Formulas
- Sphere Formulas
- Spherical Cap Formulas
- Spherical Corner Formulas
- Spherical Ring Formulas
- Spherical Sector Formulas
- Spherical Segment Formulas
- Spherical Wedge Formulas
- Square Pillar Formulas
- Star Pyramid Formulas
- Stellated Octahedron Formulas
- Toroid Formulas
- Torus Formulas
- Trirectangular Tetrahedron Formulas
- Truncated Rhombohedron Formulas

Feel free to SHARE this document with your friends!

PDF Available in

English Spanish French German Russian Italian Portuguese Polish Dutch

12/6/2023 | 6:19:44 AM UTC *Please leave your feedback here...*