



# Important Formulas of Paraboloid

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# **List of 16 Important Formulas of Paraboloid**

# Important Formulas of Paraboloid

# Height of Paraboloid 🗗

1) Height of Paraboloid

fx 
$$h = p \cdot r^2$$

 $\texttt{ex} \left[ 50 \text{m} = 2 \cdot (5 \text{m})^2 \right]$ 

## 2) Height of Paraboloid given Volume

fx 
$$h = \frac{2 \cdot V}{\pi \cdot r^2}$$

 $= \frac{2 \cdot 2000 \text{m}^3}{\pi \cdot (5\text{m})^2}$ 

# Radius of Paraboloid 🗗

# 3) Radius of Paraboloid

fx 
$$\mathbf{r}=\sqrt{rac{\mathbf{h}}{\mathbf{p}}}$$

 $\boxed{\text{ex}} 5m = \sqrt{\frac{50m}{2}}$ 





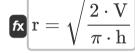
## 4) Radius of Paraboloid given Total Surface Area and Lateral Surface Area



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ex 
$$5.641896 \mathrm{m} = \sqrt{rac{1150 \mathrm{m}^2 - 1050 \mathrm{m}^2}{\pi}}$$

# 5) Radius of Paraboloid given Volume



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$$\mathbf{ex} \ 5.046265 \mathrm{m} = \sqrt{rac{2 \cdot 2000 \mathrm{m}^3}{\pi \cdot 50 \mathrm{m}}}$$

# Surface Area of Paraboloid &

# 6) Lateral Surface Area of Paraboloid

$$ag{LSA} = rac{\pi \cdot ext{r}}{6 \cdot ext{h}^2} \cdot \left( \left( ext{r}^2 + 4 \cdot ext{h}^2 
ight)^{rac{3}{2}} - ext{r}^3 
ight)^{-1}$$

Open Calculator 🗗

$$\boxed{ 1050.996 \mathrm{m}^{_2} = \frac{\pi \cdot 5 \mathrm{m}}{6 \cdot (50 \mathrm{m})^2} \cdot \left( \left( (5 \mathrm{m})^2 + 4 \cdot (50 \mathrm{m})^2 \right)^{\frac{3}{2}} - (5 \mathrm{m})^3 \right) }$$

# 7) Lateral Surface Area of Paraboloid given Height

$$ag{LSA} = rac{\pi}{6 \cdot \mathrm{p}^2} \cdot \left( (1 + 4 \cdot \mathrm{h} \cdot \mathrm{p})^{rac{3}{2}} - 1 
ight)$$

Open Calculator

$$ag{1050.996 ext{m}^2 = rac{\pi}{6 \cdot (2)^2} \cdot \left( (1 + 4 \cdot 50 ext{m} \cdot 2)^{rac{3}{2}} - 1 
ight)}$$







#### 8) Lateral Surface Area of Paraboloid given Total Surface Area

 $LSA = TSA - \pi \cdot r^2$ 

Open Calculator

 $\texttt{ex} \ 1071.46 \text{m}^{_2} = 1150 \text{m}^{_2} - \pi \cdot (5 \text{m})^2$ 

9) Total Surface Area of Paraboloid 🛂

 $ag{TSA} = \left(rac{\pi \cdot ext{r}}{6 - ext{h}^2} \cdot \left(\left( ext{r}^2 + 4 \cdot ext{h}^2
ight)^{rac{3}{2}} - ext{r}^3
ight)
ight) + \pi \cdot ext{r}^2$ 

ex

$$1129.536 \mathrm{m}^2 = \left(rac{\pi \cdot 5 \mathrm{m}}{6 \cdot (50 \mathrm{m})^2} \cdot \left(\left((5 \mathrm{m})^2 + 4 \cdot (50 \mathrm{m})^2
ight)^{rac{3}{2}} - (5 \mathrm{m})^3
ight)
ight) + \pi \cdot (5 \mathrm{m})^2$$

#### 10) Total Surface Area of Paraboloid given Height

 $ag{TSA} = rac{\pi}{6 \cdot \mathrm{p}^2} \cdot \left( (1 + 4 \cdot \mathrm{p} \cdot \mathrm{h})^{rac{3}{2}} - 1 
ight) + rac{\pi \cdot \mathrm{h}}{\mathrm{p}}$ 

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 $ag{ex} = rac{\pi}{6 \cdot (2)^2} \cdot \left( (1 + 4 \cdot 2 \cdot 50 ext{m})^{rac{3}{2}} - 1 
ight) + rac{\pi \cdot 50 ext{m}}{2}$ 

### 11) Total Surface Area of Paraboloid given Lateral Surface Area

 $TSA = LSA + \pi \cdot r^2$ 

Open Calculator

 $ext{ex} \left[ 1128.54 ext{m}^2 = 1050 ext{m}^2 + \pi \cdot (5 ext{m})^2 
ight]$ 



#### 12) Total Surface Area of Paraboloid given Radius

 $ag{TSA} = rac{\pi}{6 \cdot \mathrm{p}^2} \cdot \left( \left( 1 + 4 \cdot \mathrm{p}^2 \cdot \mathrm{r}^2 
ight)^{rac{3}{2}} - 1 
ight) + \left( \pi \cdot \mathrm{r}^2 
ight)$ 

 $\boxed{ 1129.536 \text{m}^2 = \frac{\pi}{6 \cdot \left(2\right)^2} \cdot \left( \left(1 + 4 \cdot \left(2\right)^2 \cdot \left(5 \text{m}\right)^2\right)^{\frac{3}{2}} - 1 \right) + \left(\pi \cdot \left(5 \text{m}\right)^2\right)^{\frac{3}{2}} }$ 

# **Volume of Paraboloid**

# 13) Volume of Paraboloid

 $extbf{V} = rac{1}{2} \cdot \pi \cdot ext{r}^2 \cdot ext{h}$ 

Open Calculator

Open Calculator 🗗

= 1963.495 $\mathrm{m}^{_{3}}=rac{1}{2}\cdot\pi\cdot\left(5\mathrm{m}
ight)^{2}\cdot50\mathrm{m}$ 

#### 14) Volume of Paraboloid given Height 🚰

 $V = rac{1}{2} \cdot rac{\pi \cdot h^2}{p}$ 

 $\mathbf{ex} \left[ 1963.495 \mathrm{m}^{_3} = rac{1}{2} \cdot rac{\pi \cdot (50 \mathrm{m})^2}{2} 
ight]$ 

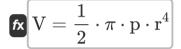
# 15) Volume of Paraboloid given Lateral Surface Area

 $V = rac{\pi}{32 \cdot \mathrm{p}^3} \cdot \left( \left( rac{6 \cdot \mathrm{LSA} \cdot \mathrm{p}^2}{\pi} + 1 
ight)^{rac{2}{3}} - 1 
ight)^2$ 

Open Calculator

 $\boxed{ 1961.009 \mathrm{m}^{_{3}} = \frac{\pi}{32 \cdot (2)^{^{3}}} \cdot \left( \left( \frac{6 \cdot 1050 \mathrm{m}^{_{2}} \cdot (2)^{^{2}}}{\pi} + 1 \right)^{\frac{2}{3}} - 1 \right)^{^{2}} }$ 

## 16) Volume of Paraboloid given Radius



Open Calculator

 $\mathbf{ex} \ 1963.495 \mathrm{m}^{_3} = rac{1}{2} \cdot \pi \cdot 2 \cdot (5 \mathrm{m})^4$ 



#### Variables Used

- **h** Height of Paraboloid (Meter)
- LSA Lateral Surface Area of Paraboloid (Square Meter)
- **p** Shape Parameter of Paraboloid
- r Radius of Paraboloid (Meter)
- TSA Total Surface Area of Paraboloid (Square Meter)
- **V** Volume of Paraboloid (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 (m³)

  Volume Unit Conversion
- Measurement: Area in Square Meter (m²)

  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
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- 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
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- Sphere Formulas
- Spherical Cap Formulas
- Spherical Corner Formulas G
- Spherical Ring Formulas



- Spherical Sector Formulas
- Spherical Segment Formulas
- Spherical Wedge Formulas
- Spherical Zone Formulas
  Square Pillar Formulas
- Star Pyramid Formulas

- Stellated Octahedron Formulas
- Toroid Formulas
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