

# Important Formulas of Paraboloid PDF



## Formulas Examples with Units

### List of 16 Important Formulas of Paraboloid

#### 1) Height of Paraboloid Formulas

##### 1.1) Height of Paraboloid Formula

Formula

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

Example with Units

$$50 \text{ m} = 2 \cdot 5 \text{ m}^2$$

Evaluate Formula

##### 1.2) Height of Paraboloid given Volume Formula

Formula

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

Example with Units

$$50.9296 \text{ m} = \frac{2 \cdot 2000 \text{ m}^3}{3.1416 \cdot 5 \text{ m}^2}$$

Evaluate Formula

#### 2) Radius of Paraboloid Formulas

##### 2.1) Radius of Paraboloid Formula

Formula

$$r = \sqrt{\frac{h}{p}}$$

Example with Units

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

Evaluate Formula

##### 2.2) Radius of Paraboloid given Total Surface Area and Lateral Surface Area Formula

Formula

$$r = \sqrt{\frac{\text{TSA} - \text{LSA}}{\pi}}$$

Example with Units

$$5.6419 \text{ m} = \sqrt{\frac{1150 \text{ m}^2 - 1050 \text{ m}^2}{3.1416}}$$

Evaluate Formula

##### 2.3) Radius of Paraboloid given Volume Formula

Formula

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

Example with Units

$$5.0463 \text{ m} = \sqrt{\frac{2 \cdot 2000 \text{ m}^3}{3.1416 \cdot 50 \text{ m}}}$$

Evaluate Formula



### 3) Surface Area of Paraboloid Formulas

#### 3.1) Lateral Surface Area of Paraboloid Formula

Formula

Evaluate Formula 

$$LSA = \frac{\pi \cdot r}{6 \cdot h^2} \cdot \left( \left( r^2 + 4 \cdot h^2 \right)^{\frac{3}{2}} - r^3 \right)$$

Example with Units

$$1050.9961 \text{ m}^2 = \frac{3.1416 \cdot 5 \text{ m}}{6 \cdot 50 \text{ m}^2} \cdot \left( \left( 5 \text{ m}^2 + 4 \cdot 50 \text{ m}^2 \right)^{\frac{3}{2}} - 5 \text{ m}^3 \right)$$

#### 3.2) Lateral Surface Area of Paraboloid given Height Formula

Formula

Evaluate Formula 

$$LSA = \frac{\pi}{6 \cdot p^2} \cdot \left( \left( 1 + 4 \cdot h \cdot p \right)^{\frac{3}{2}} - 1 \right)$$

Example with Units

$$1050.9961 \text{ m}^2 = \frac{3.1416}{6 \cdot 2^2} \cdot \left( \left( 1 + 4 \cdot 50 \text{ m} \cdot 2 \right)^{\frac{3}{2}} - 1 \right)$$

#### 3.3) Lateral Surface Area of Paraboloid given Total Surface Area Formula

Formula

Example with Units

Evaluate Formula 

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

$$1071.4602 \text{ m}^2 = 1150 \text{ m}^2 - 3.1416 \cdot 5 \text{ m}^2$$

#### 3.4) Total Surface Area of Paraboloid Formula

Formula

Evaluate Formula 

$$TSA = \left( \frac{\pi \cdot r}{6 \cdot h^2} \cdot \left( \left( r^2 + 4 \cdot h^2 \right)^{\frac{3}{2}} - r^3 \right) \right) + \pi \cdot r^2$$

Example with Units

$$1129.5359 \text{ m}^2 = \left( \frac{3.1416 \cdot 5 \text{ m}}{6 \cdot 50 \text{ m}^2} \cdot \left( \left( 5 \text{ m}^2 + 4 \cdot 50 \text{ m}^2 \right)^{\frac{3}{2}} - 5 \text{ m}^3 \right) \right) + 3.1416 \cdot 5 \text{ m}^2$$



### 3.5) Total Surface Area of Paraboloid given Height Formula

Formula

$$TSA = \frac{\pi}{6 \cdot p^2} \cdot \left( (1 + 4 \cdot p \cdot h)^{\frac{3}{2}} - 1 \right) + \frac{\pi \cdot h}{p}$$

Evaluate Formula 

Example with Units

$$1129.5359 \text{ m}^2 = \frac{3.1416}{6 \cdot 2^2} \cdot \left( (1 + 4 \cdot 2 \cdot 50 \text{ m})^{\frac{3}{2}} - 1 \right) + \frac{3.1416 \cdot 50 \text{ m}}{2}$$

### 3.6) Total Surface Area of Paraboloid given Lateral Surface Area Formula

Formula

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

Example with Units

$$1128.5398 \text{ m}^2 = 1050 \text{ m}^2 + 3.1416 \cdot 5 \text{ m}^2$$

Evaluate Formula 

### 3.7) Total Surface Area of Paraboloid given Radius Formula

Formula

$$TSA = \frac{\pi}{6 \cdot p^2} \cdot \left( (1 + 4 \cdot p^2 \cdot r^2)^{\frac{3}{2}} - 1 \right) + (\pi \cdot r^2)$$

Evaluate Formula 

Example with Units

$$1129.5359 \text{ m}^2 = \frac{3.1416}{6 \cdot 2^2} \cdot \left( (1 + 4 \cdot 2^2 \cdot 5 \text{ m}^2)^{\frac{3}{2}} - 1 \right) + (3.1416 \cdot 5 \text{ m}^2)$$

## 4) Volume of Paraboloid Formulas

### 4.1) Volume of Paraboloid Formula

Formula

$$V = \frac{1}{2} \cdot \pi \cdot r^2 \cdot h$$

Example with Units

$$1963.4954 \text{ m}^3 = \frac{1}{2} \cdot 3.1416 \cdot 5 \text{ m}^2 \cdot 50 \text{ m}$$

Evaluate Formula 

### 4.2) Volume of Paraboloid given Height Formula

Formula

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

Example with Units

$$1963.4954 \text{ m}^3 = \frac{1}{2} \cdot \frac{3.1416 \cdot 50 \text{ m}^2}{2}$$

Evaluate Formula 



#### 4.3) Volume of Paraboloid given Lateral Surface Area Formula

Formula

Evaluate Formula 

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

Example with Units

$$1961.0087 \text{ m}^3 = \frac{3.1416}{32 \cdot 2^3} \cdot \left( \left( \frac{6 \cdot 1050 \text{ m}^2 \cdot 2^2}{3.1416} + 1 \right)^{\frac{2}{3}} - 1 \right)^2$$

#### 4.4) Volume of Paraboloid given Radius Formula

Formula

Example with Units

Evaluate Formula 

$$V = \frac{1}{2} \cdot \pi \cdot p \cdot r^4$$

$$1963.4954 \text{ m}^3 = \frac{1}{2} \cdot 3.1416 \cdot 2 \cdot 5 \text{ m}^4$$



## Variables used in list of Important Formulas of Paraboloid above

- **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 in list of Important Formulas of Paraboloid 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 (m³)  
*Volume Unit Conversion* 
- **Measurement: Area** in Square Meter (m²)  
*Area Unit Conversion* 



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- **Important Spherical Ring Formulas** 
- **Important Spherical Sector Formulas** 
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