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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

Open Calculator

fx $h = p \cdot r^2$

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

2) Height of Paraboloid given Volume

Open Calculator

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

ex $50.92958\text{m} = \frac{2 \cdot 2000\text{m}^3}{\pi \cdot (5\text{m})^2}$

Radius of Paraboloid

3) Radius of Paraboloid

Open Calculator

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

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

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

Open Calculator

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

ex $$5.641896\text{m} = \sqrt{\frac{1150\text{m}^2 - 1050\text{m}^2}{\pi}}$$

5) Radius of Paraboloid given Volume

Open Calculator

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

ex $$5.046265\text{m} = \sqrt{\frac{2 \cdot 2000\text{m}^3}{\pi \cdot 50\text{m}}}$$

Surface Area of Paraboloid

6) Lateral Surface Area of Paraboloid

Open Calculator

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

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

7) Lateral Surface Area of Paraboloid given Height

Open Calculator

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

ex $$1050.996\text{m}^2 = \frac{\pi}{6 \cdot (2)^2} \cdot \left((1 + 4 \cdot 50\text{m} \cdot 2)^{\frac{3}{2}} - 1\right)$$

8) Lateral Surface Area of Paraboloid given Total Surface Area

Open Calculator

fx $$\mathrm{LSA} = \mathrm{TSA} - \pi \cdot \mathrm{r}^2$$

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

9) Total Surface Area of Paraboloid

Open Calculator

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

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

10) Total Surface Area of Paraboloid given Height

Open Calculator

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

ex $$1129.536\mathrm{m}^2 = \frac{\pi}{6 \cdot (2)^2} \cdot \left((1 + 4 \cdot 2 \cdot 50\mathrm{m})^{\frac{3}{2}} - 1\right) + \frac{\pi \cdot 50\mathrm{m}}{2}$$

11) Total Surface Area of Paraboloid given Lateral Surface Area

Open Calculator

fx $$\mathrm{TSA} = \mathrm{LSA} + \pi \cdot \mathrm{r}^2$$

ex $$1128.54\mathrm{m}^2 = 1050\mathrm{m}^2 + \pi \cdot (5\mathrm{m})^2$$

12) Total Surface Area of Paraboloid given Radius

Open Calculator

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

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

Volume of Paraboloid

13) Volume of Paraboloid

Open Calculator

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

ex $$1963.495\mathrm{m}^3 = \frac{1}{2} \cdot \pi \cdot (5\mathrm{m})^2 \cdot 50\mathrm{m}$$

14) Volume of Paraboloid given Height

Open Calculator

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

ex $$1963.495\mathrm{m}^3 = \frac{1}{2} \cdot \frac{\pi \cdot (50\mathrm{m})^2}{2}$$

15) Volume of Paraboloid given Lateral Surface Area

Open Calculator

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

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

16) Volume of Paraboloid given Radius

Open Calculator

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

ex $$1963.495\text{m}^3 = \frac{1}{2} \cdot \pi \cdot 2 \cdot (5\text{m})^4$$

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 (m^3)
  Volume Unit Conversion
- Measurement: **Area** in Square Meter (m^2)
  Area Unit Conversion

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- Cut Cylindrical Shell Formulas
- Cylinder Formulas
- Cylindrical Shell Formulas
- Diagonally Halved Cylinder Formulas
- Disphenoid Formulas
- Double Calotte Formulas
- Double Point Formulas
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- Elongated Dodecahedron Formulas
- Flat End Cylinder Formulas
- Frustum of Cone Formulas
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- Spherical Cap Formulas
- Spherical Corner Formulas
- Spherical Ring Formulas

- **Spherical Sector Formulas**
- **Spherical Segment Formulas**
- **Spherical Wedge Formulas**
- **Spherical Zone Formulas**
- **Square Pillar Formulas**
- **Star Pyramid Formulas**
- **Stellated Octahedron Formulas**
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- **Trirectangular Tetrahedron Formulas**
- **Truncated Rhombohedron Formulas**

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