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Important Formulas of Hollow Hemisphere

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List of 11 Important Formulas of Hollow Hemisphere

Important Formulas of Hollow Hemisphere ⌁

Radius of Hollow Hemisphere ⌁

1) Inner Radius of Hollow Hemisphere ⌁

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

Open Calculator ⌁

ex $10m = 12m - 2m$

2) Outer Radius of Hollow Hemisphere ⌁

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

Open Calculator ⌁

ex $12m = 2m + 10m$

Shell Thickness of Hollow Hemisphere ⌁

3) Shell Thickness of Hollow Hemisphere ⌁

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

Open Calculator ⌁

ex $2m = 12m - 10m$

4) Shell Thickness of Hollow Hemisphere given Total Surface Area and Inner Radius

Open Calculator

$$fx \quad t_{Shell} = \sqrt{\frac{1}{3} \cdot \left(\frac{TSA}{\pi} - r_{Inner}^2 \right)} - r_{Inner}$$

$$ex \quad 1.994131m = \sqrt{\frac{1}{3} \cdot \left(\frac{1670m^2}{\pi} - (10m)^2 \right)} - 10m$$

5) Shell Thickness of Hollow Hemisphere given Volume and Outer Radius

Open Calculator

$$fx \quad t_{Shell} = r_{Outer} - \left(r_{Outer}^3 - \frac{3 \cdot V}{2 \cdot \pi} \right)^{\frac{1}{3}}$$

$$ex \quad 2.000446m = 12m - \left((12m)^3 - \frac{3 \cdot 1525m^3}{2 \cdot \pi} \right)^{\frac{1}{3}}$$

Total Surface Area of Hollow Hemisphere

6) Total Surface Area of Hollow Hemisphere

fx

Open Calculator

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

ex

$$1671.327m^2 = \pi \cdot \left(\left(2 \cdot \left((12m)^2 + (10m)^2 \right) \right) + \left((12m)^2 - (10m)^2 \right) \right)$$

7) Total Surface Area of Hollow Hemisphere given Shell Thickness and Outer Radius 🔗

Open Calculator 🔗

$$fx \quad \mathrm{TSA} = \pi \cdot \left(3 \cdot r_{\mathrm{Outer}}^2 + (r_{\mathrm{Outer}} - t_{\mathrm{Shell}})^2 \right)$$

$$ex \quad 1671.327 \mathrm{m^2} = \pi \cdot \left(3 \cdot (12\mathrm{m})^2 + (12\mathrm{m} - 2\mathrm{m})^2 \right)$$

8) Total Surface Area of Hollow Hemisphere given Volume and Inner Radius 🔗

Open Calculator 🔗

$$fx \quad \mathrm{TSA} = \pi \cdot \left(3 \cdot \left(\frac{3 \cdot V}{2 \cdot \pi} + r_{\mathrm{Inner}}^3 \right)^{\frac{2}{3}} + r_{\mathrm{Inner}}^2 \right)$$

$$ex \quad 1671.397 \mathrm{m^2} = \pi \cdot \left(3 \cdot \left(\frac{3 \cdot 1525 \mathrm{m^3}}{2 \cdot \pi} + (10\mathrm{m})^3 \right)^{\frac{2}{3}} + (10\mathrm{m})^2 \right)$$

Volume of Hollow Hemisphere 🔗

9) Volume of Hollow Hemisphere 🔗

Open Calculator 🔗

$$fx \quad V = \frac{2}{3} \cdot \pi \cdot \left(r_{\mathrm{Outer}}^3 - r_{\mathrm{Inner}}^3 \right)$$

$$ex \quad 1524.72 \mathrm{m^3} = \frac{2}{3} \cdot \pi \cdot \left((12\mathrm{m})^3 - (10\mathrm{m})^3 \right)$$

10) Volume of Hollow Hemisphere given Shell Thickness and Inner Radius 🔗

Open Calculator 🔗

fx $$V = \frac{2}{3} \cdot \pi \cdot \left(\left(t_{Shell} + r_{Inner} \right)^3 - r_{Inner}^3 \right)$$

ex $$1524.72 m^3 = \frac{2}{3} \cdot \pi \cdot \left(\left(2m + 10m \right)^3 - \left(10m \right)^3 \right)$$

11) Volume of Hollow Hemisphere given Total Surface Area and Outer Radius 🔗

fx **Open Calculator** 🔗

$$V = \frac{2}{3} \cdot \pi \cdot \left(r_{Outer}^3 - \left(\sqrt{ \left(\frac{TSA}{\pi} \right) - \left(3 \cdot r_{Outer}^2 \right) } \right)^3 \right)$$

ex
$$1537.979 m^3 = \frac{2}{3} \cdot \pi \cdot \left(\left(12m \right)^3 - \left(\sqrt{ \left(\frac{1670 m^2}{\pi} \right) - \left(3 \cdot \left(12m \right)^2 \right) } \right)^3 \right)$$

Variables Used

- r_{Inner} Inner Radius of Hollow Hemisphere *(Meter)*

- r_{Outer} Outer Radius of Hollow Hemisphere *(Meter)*

- t_{Shell} Shell Thickness of Hollow Hemisphere *(Meter)*

- **TSA** Total Surface Area of Hollow Hemisphere *(Square Meter)*

- **V** Volume of Hollow Hemisphere *(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 🔗

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