# Important Anticube Formulas PDF

Formulas
Examples
with Units

**List of 20**
**Important Anticube Formulas**

## 1) Edge Length of Anticube Formulas

### 1.1) Edge Length of Anticube Formula

Evaluate Formula

Formula

$$l_e = \frac{h}{\sqrt{1 - \frac{1}{2+\sqrt{2}}}}$$

Example with Units

$$9.5137\,\text{m} = \frac{8\,\text{m}}{\sqrt{1 - \frac{1}{2+\sqrt{2}}}}$$

### 1.2) Edge Length of Anticube given Surface to Volume Ratio Formula

Evaluate Formula

Formula

$$l_e = \frac{2 \cdot \left(1+\sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1+\sqrt{2}} \cdot \sqrt{2+\sqrt{2}} \cdot R_{A/V}}$$

Example with Units

$$11.4192\,\text{m} = \frac{2 \cdot \left(1+\sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1+\sqrt{2}} \cdot \sqrt{2+\sqrt{2}} \cdot 0.5\,\text{m}^{-1}}$$

### 1.3) Edge Length of Anticube given Total Surface Area Formula

Evaluate Formula

Formula

$$l_e = \sqrt{\frac{TSA}{2 \cdot \left(1+\sqrt{3}\right)}}$$

Example with Units

$$9.9871\,\text{m} = \sqrt{\frac{545\,\text{m}^2}{2 \cdot \left(1+\sqrt{3}\right)}}$$

### 1.4) Edge Length of Anticube given Volume Formula

Evaluate Formula

Formula

$$l_e = \left(\frac{3 \cdot V}{\sqrt{1+\sqrt{2}} \cdot \sqrt{2+\sqrt{2}}}\right)^{\frac{1}{3}}$$

Example with Units

$$9.993\,\text{m} = \left(\frac{3 \cdot 955\,\text{m}^3}{\sqrt{1+\sqrt{2}} \cdot \sqrt{2+\sqrt{2}}}\right)^{\frac{1}{3}}$$

## 2) Height of Anticube Formulas

### 2.1) Height of Anticube Formula

Evaluate Formula

Formula

$$h = \sqrt{1 - \frac{1}{2+\sqrt{2}}} \cdot l_e$$

Example with Units

$$8.409\,\text{m} = \sqrt{1 - \frac{1}{2+\sqrt{2}}} \cdot 10\,\text{m}$$

### 2.2) Height of Anticube given Surface to Volume Ratio Formula

Evaluate Formula

Formula

$$h = \sqrt{1 - \frac{1}{2+\sqrt{2}}} \cdot \frac{2 \cdot \left(1+\sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1+\sqrt{2}} \cdot \sqrt{2+\sqrt{2}} \cdot R_{A/V}}$$

Example with Units

$$9.6024\,\text{m} = \sqrt{1 - \frac{1}{2+\sqrt{2}}} \cdot \frac{2 \cdot \left(1+\sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1+\sqrt{2}} \cdot \sqrt{2+\sqrt{2}} \cdot 0.5\,\text{m}^{-1}}$$

### 2.3) Height of Anticube given Total Surface Area Formula

Evaluate Formula

Formula

$$h = \sqrt{1 - \frac{1}{2+\sqrt{2}}} \cdot \sqrt{\frac{TSA}{2 \cdot \left(1+\sqrt{3}\right)}}$$

Example with Units

$$8.3981\,\text{m} = \sqrt{1 - \frac{1}{2+\sqrt{2}}} \cdot \sqrt{\frac{545\,\text{m}^2}{2 \cdot \left(1+\sqrt{3}\right)}}$$

### 2.4) Height of Anticube given Volume Formula

Evaluate Formula

Formula

$$h = \sqrt{1 - \frac{1}{2+\sqrt{2}}} \cdot \left(\frac{3 \cdot V}{\sqrt{1+\sqrt{2}} \cdot \sqrt{2+\sqrt{2}}}\right)^{\frac{1}{3}}$$

Example with Units

$$8.4031\,\text{m} = \sqrt{1 - \frac{1}{2+\sqrt{2}}} \cdot \left(\frac{3 \cdot 955\,\text{m}^3}{\sqrt{1+\sqrt{2}} \cdot \sqrt{2+\sqrt{2}}}\right)^{\frac{1}{3}}$$

## 3) Surface Area of Anticube Formulas

### 3.1) Total Surface Area of Anticube Formulas

#### 3.1.1) Total Surface Area of Anticube Formula

Evaluate Formula

Formula

$$TSA = 2 \cdot \left(1+\sqrt{3}\right) \cdot l_e^{\,2}$$

Example with Units

$$546.4102\,\text{m}^2 = 2 \cdot \left(1+\sqrt{3}\right) \cdot 10\,\text{m}^{\,2}$$

#### 3.1.2) Total Surface Area of Anticube given Height Formula

Evaluate Formula

Formula

$$TSA = 2 \cdot \left(1+\sqrt{3}\right) \cdot \left(\frac{h}{\sqrt{1 - \frac{1}{2+\sqrt{2}}}}\right)^2$$

Example with Units

$$494.554\,\text{m}^2 = 2 \cdot \left(1+\sqrt{3}\right) \cdot \left(\frac{8\,\text{m}}{\sqrt{1 - \frac{1}{2+\sqrt{2}}}}\right)^2$$

### 3.1.3) Total Surface Area of Anticube given Surface to Volume Ratio Formula

Evaluate Formula

Formula

$$TSA = 2 \cdot \left(1 + \sqrt{3}\right) \cdot \left( \frac{2 \cdot \left(1 + \sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}} \cdot R_{A/V}} \right)^2$$

Example with Units

$$712.5124\,\text{m}^2 = 2 \cdot \left(1 + \sqrt{3}\right) \cdot \left( \frac{2 \cdot \left(1 + \sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}} \cdot 0.5\,\text{m}^{-1}} \right)^2$$

### 3.1.4) Total Surface Area of Anticube given Volume Formula

Evaluate Formula

Formula

$$TSA = 2 \cdot \left(1 + \sqrt{3}\right) \cdot \left( \frac{3 \cdot V}{\sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}}} \right)^{\frac{2}{3}}$$

Example with Units

$$545.6486\,\text{m}^2 = 2 \cdot \left(1 + \sqrt{3}\right) \cdot \left( \frac{3 \cdot 955\,\text{m}^3}{\sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}}} \right)^{\frac{2}{3}}$$

## 4) Surface to Volume Ratio of Anticube Formulas

### 4.1) Surface to Volume Ratio of Anticube Formula

Evaluate Formula

Formula

$$R_{A/V} = \frac{2 \cdot \left(1 + \sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}} \cdot l_e}$$

Example with Units

$$0.571\,\text{m}^{-1} = \frac{2 \cdot \left(1 + \sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}} \cdot 10\,\text{m}}$$

### 4.2) Surface to Volume Ratio of Anticube given Height Formula

Evaluate Formula

Formula

$$R_{A/V} = \frac{2 \cdot \left(1 + \sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}} \cdot \frac{h}{\sqrt{1 - \frac{1}{2 + \sqrt{2}}}}}$$

Example with Units

$$0.6001\,\text{m}^{-1} = \frac{2 \cdot \left(1 + \sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}} \cdot \frac{8\,\text{m}}{\sqrt{1 - \frac{1}{2 + \sqrt{2}}}}}$$

### 4.3) Surface to Volume Ratio of Anticube given Total Surface Area Formula

Evaluate Formula

Formula

$$R_{A/V} = \frac{2 \cdot \left(1 + \sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}} \cdot \sqrt{\frac{TSA}{2 \cdot \left(1 + \sqrt{3}\right)}}}$$

Example with Units

$$0.5717\,\text{m}^{-1} = \frac{2 \cdot \left(1 + \sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}} \cdot \sqrt{\frac{545\,\text{m}^2}{2 \cdot \left(1 + \sqrt{3}\right)}}}$$

### 4.4) Surface to Volume Ratio of Anticube given Volume Formula

Evaluate Formula

Formula

$$R_{A/V} = \frac{2 \cdot \left(1 + \sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}} \cdot \left(\frac{3 \cdot V}{\sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}}}\right)^{\frac{1}{3}}}$$

Example with Units

$$0.5714\,\text{m}^{-1} = \frac{2 \cdot \left(1 + \sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}} \cdot \left(\frac{3 \cdot 955\,\text{m}^3}{\sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}}}\right)^{\frac{1}{3}}}$$

## 5) Volume of Anticube Formulas

### 5.1) Volume of Anticube Formula

Evaluate Formula

Formula

$$V = \frac{1}{3} \cdot \sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}} \cdot l_e^{\,3}$$

Example with Units

$$957\,\text{m}^3 = \frac{1}{3} \cdot \sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}} \cdot 10\,\text{m}^{\,3}$$

### 5.2) Volume of Anticube given Height Formula

Evaluate Formula

Formula

$$V = \frac{1}{3} \cdot \sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}} \cdot \left(\frac{h}{\sqrt{1 - \frac{1}{2 + \sqrt{2}}}}\right)^3$$

Example with Units

$$824.0516\,\text{m}^3 = \frac{1}{3} \cdot \sqrt{1 + \sqrt{2}} \cdot \sqrt{2 + \sqrt{2}} \cdot \left(\frac{8\,\text{m}}{\sqrt{1 - \frac{1}{2 + \sqrt{2}}}}\right)^3$$

## 5.3) Volume of Anticube given Surface to Volume Ratio Formula

Evaluate Formula

Formula

$$V = \frac{1}{3} \cdot \sqrt{1+\sqrt{2}} \cdot \sqrt{2+\sqrt{2}} \cdot \left( \frac{2 \cdot \left(1+\sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1+\sqrt{2}} \cdot \sqrt{2+\sqrt{2}} \cdot R_{A/V}} \right)^3$$

Example with Units

$$1425.0248\,\text{m}^3 = \frac{1}{3} \cdot \sqrt{1+\sqrt{2}} \cdot \sqrt{2+\sqrt{2}} \cdot \left( \frac{2 \cdot \left(1+\sqrt{3}\right)}{\frac{1}{3} \cdot \sqrt{1+\sqrt{2}} \cdot \sqrt{2+\sqrt{2}} \cdot 0.5\,\text{m}^{-1}} \right)^3$$

## 5.4) Volume of Anticube given Total Surface Area Formula

Evaluate Formula

Formula

$$V = \frac{1}{3} \cdot \sqrt{1+\sqrt{2}} \cdot \sqrt{2+\sqrt{2}} \cdot \left( \sqrt{\frac{TSA}{2 \cdot \left(1+\sqrt{3}\right)}} \right)^3$$

Example with Units

$$953.2977\,\text{m}^3 = \frac{1}{3} \cdot \sqrt{1+\sqrt{2}} \cdot \sqrt{2+\sqrt{2}} \cdot \left( \sqrt{\frac{545\,\text{m}^2}{2 \cdot \left(1+\sqrt{3}\right)}} \right)^3$$

## Variables used in list of Anticube Formulas above

- **h** Height of Anticube *(Meter)*
- $l_e$ Edge Length of Anticube *(Meter)*
- $R_{A/V}$ Surface to Volume Ratio of Anticube *(1 per Meter)*
- **TSA** Total Surface Area of Anticube *(Square Meter)*
- **V** Volume of Anticube *(Cubic Meter)*

## Constants, Functions, Measurements used in list of Anticube Formulas above

- 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 ($m^3$)
  *Volume Unit Conversion*
- Measurement: **Area** in Square Meter ($m^2$)
  *Area Unit Conversion*
- Measurement: **Reciprocal Length** in 1 per Meter ($m^{-1}$)
  *Reciprocal Length Unit Conversion*

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