

Important Circular Arc and Circular Quadrant Formulas PDF



Formulas
Examples
with Units

List of 17 Important Circular Arc and Circular Quadrant Formulas

1) Circular Arc Formulas

1.1) Angle of Circular Arc Formulas

1.1.1) Angle of Circular Arc given Arc Length Formula

Formula

$$\angle_{\text{Arc}} = \frac{l_{\text{Arc}}}{r_{\text{Arc}}}$$

Example with Units

$$45.8366^\circ = \frac{4 \text{ m}}{5 \text{ m}}$$

Evaluate Formula

1.1.2) Angle of Circular Arc given Arc Length and Circumference Formula

Formula

$$\angle_{\text{Arc}} = \frac{2 \cdot \pi \cdot l_{\text{Arc}}}{C_{\text{Circle}}}$$

Example with Units

$$48^\circ = \frac{2 \cdot 3.1416 \cdot 4 \text{ m}}{30 \text{ m}}$$

Evaluate Formula

1.1.3) Angle of Circular Arc given Inscribed Angle Formula

Formula

$$\angle_{\text{Arc}} = 2 \cdot \angle_{\text{Inscribed}}$$

Example with Units

$$40^\circ = 2 \cdot 20^\circ$$

Evaluate Formula

1.1.4) Angle of Circular Arc given Sector Area Formula

Formula

$$\angle_{\text{Arc}} = \frac{2 \cdot A_{\text{Sector}}}{r_{\text{Arc}}^2}$$

Example with Units

$$41.253^\circ = \frac{2 \cdot 9 \text{ m}^2}{5 \text{ m}^2}$$

Evaluate Formula

1.2) Arc Length of Circular Arc Formulas

1.2.1) Arc Length of Circular Arc Formula

Formula

$$l_{\text{Arc}} = r_{\text{Arc}} \cdot \angle_{\text{Arc}}$$

Example with Units

$$3.4907 \text{ m} = 5 \text{ m} \cdot 40^\circ$$

Evaluate Formula



1.2.2) Arc Length of Circular Arc given Circumference Formula

Formula

$$l_{\text{Arc}} = C_{\text{Circle}} \cdot \frac{\angle_{\text{Arc}}}{2 \cdot \pi}$$

Example with Units

$$3.3333 \text{ m} = 30 \text{ m} \cdot \frac{40^\circ}{2 \cdot 3.1416}$$

Evaluate Formula 

1.2.3) Arc Length of Circular Arc given Sector Area Formula

Formula

$$l_{\text{Arc}} = \frac{2 \cdot A_{\text{Sector}}}{r_{\text{Arc}}}$$

Example with Units

$$3.6 \text{ m} = \frac{2 \cdot 9 \text{ m}^2}{5 \text{ m}}$$

Evaluate Formula 

1.3) Major and Minor Arc Lengths of Circular Arc Formulas

1.3.1) Major Arc Length given Minor Arc Length Formula

Formula

$$l_{\text{Major}} = (2 \cdot \pi \cdot r_{\text{Arc}}) - l_{\text{Minor}}$$

Example with Units

$$25.4159 \text{ m} = (2 \cdot 3.1416 \cdot 5 \text{ m}) - 6 \text{ m}$$

Evaluate Formula 

1.3.2) Major Arc Length given Tangent Angle Formula

Formula

$$l_{\text{Major}} = (\pi + \angle_{\text{Tangent}}) \cdot r_{\text{Arc}}$$

Example with Units

$$27.9253 \text{ m} = (3.1416 + 140^\circ) \cdot 5 \text{ m}$$

Evaluate Formula 

1.3.3) Minor Arc Length given Major Arc Length Formula

Formula

$$l_{\text{Minor}} = (2 \cdot \pi \cdot r_{\text{Arc}}) - l_{\text{Major}}$$

Example with Units

$$6.4159 \text{ m} = (2 \cdot 3.1416 \cdot 5 \text{ m}) - 25 \text{ m}$$

Evaluate Formula 

1.3.4) Minor Arc Length given Tangent Angle Formula

Formula

$$l_{\text{Minor}} = (\pi - \angle_{\text{Tangent}}) \cdot r_{\text{Arc}}$$

Example with Units

$$3.4907 \text{ m} = (3.1416 - 140^\circ) \cdot 5 \text{ m}$$

Evaluate Formula 

1.4) Tangent Angle of Circular Arc Formulas

1.4.1) Tangent Angle of Circular Arc Formula

Formula

$$\angle_{\text{Tangent}} = \pi - \angle_{\text{Arc}}$$

Example with Units

$$140^\circ = 3.1416 - 40^\circ$$

Evaluate Formula 

1.4.2) Tangent Angle of Circular Arc given Major and Minor Arc Length Formula

Formula

$$\angle_{\text{Tangent}} = \pi \cdot \frac{l_{\text{Major}} - l_{\text{Minor}}}{l_{\text{Major}} + l_{\text{Minor}}}$$

Example with Units

$$110.3226^\circ = 3.1416 \cdot \frac{25 \text{ m} - 6 \text{ m}}{25 \text{ m} + 6 \text{ m}}$$

Evaluate Formula 



2) Circular Quadrant Formulas

2.1) Area of Circle given Area of Quadrant Formula

Formula

$$A_{\text{Circle}} = 4 \cdot A$$

Example with Units

$$80\text{m}^2 = 4 \cdot 20\text{m}^2$$

Evaluate Formula 

2.2) Area of Circular Quadrant Formula

Formula

$$A = \frac{\pi \cdot r^2}{4}$$

Example with Units

$$19.635\text{m}^2 = \frac{3.1416 \cdot 5\text{m}^2}{4}$$

Evaluate Formula 

2.3) Area of Circular Quadrant given Area of Circle Formula

Formula

$$A = \frac{A_{\text{Circle}}}{4}$$

Example with Units

$$20\text{m}^2 = \frac{80\text{m}^2}{4}$$

Evaluate Formula 

2.4) Perimeter of Circular Quadrant Formula

Formula

$$P = \left(\frac{\pi}{2} + 2 \right) \cdot r$$

Example with Units

$$17.854\text{m} = \left(\frac{3.1416}{2} + 2 \right) \cdot 5\text{m}$$




Evaluate Formula 



Variables used in list of Circular Arc and Circular Quadrant Formulas above




- \angle_{Arc} Angle of Circular Arc (Degree)
- $\angle_{\text{Inscribed}}$ Inscribed Angle of Circular Arc (Degree)
- \angle_{Tangent} Tangent Angle of Circular Arc (Degree)
- **A** Area of Circular Quadrant (Square Meter)
- **A**_{Circle} Area of Circle of Circular Quadrant (Square Meter)
- **A**_{Sector} Sector Area of Circular Arc (Square Meter)
- **C**_{Circle} Circumference of Circle of Circular Arc (Meter)
- **I**_{Arc} Arc Length of Circular Arc (Meter)
- **I**_{Major} Major Arc Length of Circular Arc (Meter)
- **I**_{Minor} Minor Arc Length of Circular Arc (Meter)
- **P** Perimeter of Circular Quadrant (Meter)
- **r** Radius of Circular Quadrant (Meter)
- **r**_{Arc} Radius of Circular Arc (Meter)

Constants, Functions, Measurements used in list of Circular Arc and Circular Quadrant Formulas above

- **constant(s):** pi, 3.14159265358979323846264338327950288
Archimedes' constant
- **Measurement: Length** in Meter (m)
Length Unit Conversion 
- **Measurement: Area** in Square Meter (m²)
Area Unit Conversion 
- **Measurement: Angle** in Degree (°)
Angle Unit Conversion 



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