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# Design of Helical Gears Formulas

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# List of 55 Design of Helical Gears Formulas

## Design of Helical Gears

### Basic Formulas of Helical Gear

#### 1) Angular Velocity of Gear given Speed Ratio

$$fx \quad n_g = \frac{n_p}{i}$$

[Open Calculator !\[\]\(de95854c7ee024cfadc48187bbb781b2\_img.jpg\)](#)

$$ex \quad 8.272727 \text{ rad/s} = \frac{18.2 \text{ rad/s}}{2.2}$$

#### 2) Angular Velocity of Pinion given Speed Ratio

$$fx \quad n_p = i \cdot n_g$$

[Open Calculator !\[\]\(6a9b39b98eb945faa14c645ec99e4eaa\_img.jpg\)](#)

$$ex \quad 18.04 \text{ rad/s} = 2.2 \cdot 8.2 \text{ rad/s}$$

#### 3) Axial Pitch of Helical Gear given Helix Angle

$$fx \quad p_a = \frac{p}{\tan(\psi)}$$

[Open Calculator !\[\]\(f1c5da15572e3e09d343161be98f508d\_img.jpg\)](#)

$$ex \quad 22.90333 \text{ mm} = \frac{10.68 \text{ mm}}{\tan(25^\circ)}$$



#### 4) Center to Center distance between Two Gears

$$\text{fx } a_c = m_n \cdot \frac{z_1 + z_2}{2 \cdot \cos(\psi)}$$

[Open Calculator !\[\]\(cbe80b694ebd74fcfe136a095b608235\_img.jpg\)](#)

$$\text{ex } 99.30401\text{mm} = 3\text{mm} \cdot \frac{18 + 42}{2 \cdot \cos(25^\circ)}$$

#### 5) Normal Circular Pitch of Helical Gear

$$\text{fx } P_N = p \cdot \cos(\psi)$$

[Open Calculator !\[\]\(3e2231b1ad3ca8da8658228c00dd08e0\_img.jpg\)](#)

$$\text{ex } 9.679367\text{mm} = 10.68\text{mm} \cdot \cos(25^\circ)$$

#### 6) Normal Circular Pitch of Helical Gear given Virtual Number of Teeth

$$\text{fx } P_N = 2 \cdot \pi \cdot \frac{r_{vh}}{z'}$$

[Open Calculator !\[\]\(0d5ec72f61334709c3fc9450209b754f\_img.jpg\)](#)

$$\text{ex } 3.723369\text{mm} = 2 \cdot \pi \cdot \frac{32\text{mm}}{54}$$

#### 7) Normal Pressure Angle of Helical Gear given Helix Angle

$$\text{fx } \alpha_n = a \tan(\tan(\alpha) \cdot \cos(\psi))$$

[Open Calculator !\[\]\(b64b40baaee5acddc1eab8538ba84754\_img.jpg\)](#)

$$\text{ex } 20.11132^\circ = a \tan(\tan(22^\circ) \cdot \cos(25^\circ))$$

#### 8) Pitch of Helical Gear given Axial Pitch

$$\text{fx } p = p_a \cdot \tan(\psi)$$

[Open Calculator !\[\]\(aff7c69c44a5e015f18c35867ef3f5c3\_img.jpg\)](#)

$$\text{ex } 10.39866\text{mm} = 22.3\text{mm} \cdot \tan(25^\circ)$$



## 9) Pitch of Helical Gear given Normal Circular Pitch

$$\text{fx } p = \frac{P_N}{\cos(\psi)}$$

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95\_img.jpg\)](#)

$$\text{ex } 10.59243\text{mm} = \frac{9.6\text{mm}}{\cos(25^\circ)}$$

## 10) Semi Major Axis of Elliptical Profile given Radius of Curvature at Point

$$\text{fx } a = \sqrt{r' \cdot b}$$

[Open Calculator !\[\]\(05be7c7a8995decd503647c99211f7c2\_img.jpg\)](#)

$$\text{ex } 19.89975\text{mm} = \sqrt{72\text{mm} \cdot 5.5\text{mm}}$$

## 11) Semi Minor Axis of Elliptical Profile given Radius of Curvature at Point

$$\text{fx } b = \frac{a^2}{r'}$$

[Open Calculator !\[\]\(fe3aebe81acea8d45108cd2768939da7\_img.jpg\)](#)

$$\text{ex } 5.28125\text{mm} = \frac{(19.5\text{mm})^2}{72\text{mm}}$$

## 12) Speed Ratio for Helical Gears

$$\text{fx } i = \frac{n_p}{n_g}$$

[Open Calculator !\[\]\(899d8b7697d64725bf017d3296cfcf1b\_img.jpg\)](#)

$$\text{ex } 2.219512 = \frac{18.2\text{rad/s}}{8.2\text{rad/s}}$$



### 13) Transverse Diametrical Pitch of Helical Gear given Transverse Module



$$fx \quad P = \frac{1}{m}$$

[Open Calculator](#)

$$ex \quad 0.294118\text{mm}^{-1} = \frac{1}{3.4\text{mm}}$$

### 14) Transverse Module of Helical Gear given Normal Module



$$fx \quad m = \frac{m_n}{\cos(\psi)}$$

[Open Calculator](#)

$$ex \quad 3.310134\text{mm} = \frac{3\text{mm}}{\cos(25^\circ)}$$

### 15) Transverse Module of Helical Gear given Transverse Diametrical Pitch



$$fx \quad m = \frac{1}{P}$$

[Open Calculator](#)

$$ex \quad 3.448276\text{mm} = \frac{1}{0.29\text{mm}^{-1}}$$



## 16) Transverse Pressure Angle of Helical Gear given Helix Angle

$$\text{fx } \alpha = a \tan \left( \frac{\tan(\alpha_n)}{\cos(\psi)} \right)$$

[Open Calculator !\[\]\(d3fb9f94af8b26d1c844efa9a98805b0\_img.jpg\)](#)

$$\text{ex } 21.98782^\circ = a \tan \left( \frac{\tan(20.1^\circ)}{\cos(25^\circ)} \right)$$

## Helix Angle

## 17) Helix Angle of Helical Gear given Actual and Virtual Number of Teeth

$$\text{fx } \psi = a \cos \left( \left( \frac{Z}{Z'} \right)^{\frac{1}{3}} \right)$$

[Open Calculator !\[\]\(73002692dd5e7a64e60946be3158e719\_img.jpg\)](#)

$$\text{ex } 28.16458^\circ = a \cos \left( \left( \frac{37}{54} \right)^{\frac{1}{3}} \right)$$

## 18) Helix Angle of Helical Gear given Axial Pitch

$$\text{fx } \psi = a \tan \left( \frac{p}{p_a} \right)$$

[Open Calculator !\[\]\(104fbf564e2e5a8fbd84f31656d114c7\_img.jpg\)](#)

$$\text{ex } 25.59087^\circ = a \tan \left( \frac{10.68\text{mm}}{22.3\text{mm}} \right)$$



## 19) Helix Angle of Helical Gear given Center to Center Distance between Two Gears

$$\text{fx } \psi = a \cos \left( m_n \cdot \frac{z_1 + z_2}{2 \cdot a_c} \right)$$

[Open Calculator !\[\]\(9dfdaff1d86ba3c1f8353b4d1b61b8c5\_img.jpg\)](#)

$$\text{ex } 24.99503^\circ = a \cos \left( 3\text{mm} \cdot \frac{18 + 42}{2 \cdot 99.3\text{mm}} \right)$$

## 20) Helix Angle of Helical Gear given Normal Circular Pitch

$$\text{fx } \psi = a \cos \left( \frac{P_N}{p} \right)$$

[Open Calculator !\[\]\(2b376d1a92330ab09dad2665d2f89bf5\_img.jpg\)](#)

$$\text{ex } 25.98923^\circ = a \cos \left( \frac{9.6\text{mm}}{10.68\text{mm}} \right)$$

## 21) Helix Angle of Helical Gear given Normal Module

$$\text{fx } \psi = a \cos \left( \frac{m_n}{m} \right)$$

[Open Calculator !\[\]\(c444627dab9fee9a1550c053ffaaaae2\_img.jpg\)](#)

$$\text{ex } 28.07249^\circ = a \cos \left( \frac{3\text{mm}}{3.4\text{mm}} \right)$$

## 22) Helix Angle of Helical Gear given Pitch Circle Diameter

$$\text{fx } \psi = a \cos \left( z \cdot \frac{m_n}{d} \right)$$

[Open Calculator !\[\]\(06a315363e7801bba8c7489a6694af19\_img.jpg\)](#)

$$\text{ex } 19.83427^\circ = a \cos \left( 37 \cdot \frac{3\text{mm}}{118\text{mm}} \right)$$



### 23) Helix Angle of Helical Gear given Pressure Angle

[Open Calculator !\[\]\(3d8c13c92b853674f749aac6fa869926\_img.jpg\)](#)

$$\text{fx } \psi = a \cos \left( \frac{\tan(\alpha_n)}{\tan(\alpha)} \right)$$

$$\text{ex } 25.07509^\circ = a \cos \left( \frac{\tan(20.1^\circ)}{\tan(22^\circ)} \right)$$

### 24) Helix Angle of Helical Gear given Radius of Curvature at Point

[Open Calculator !\[\]\(17acf1afa8cdf0b67c53d4865a5ed469\_img.jpg\)](#)

$$\text{fx } \psi = \sqrt{a \cos \left( \frac{d}{2 \cdot r'} \right)}$$

$$\text{ex } 44.76246^\circ = \sqrt{a \cos \left( \frac{118\text{mm}}{2 \cdot 72\text{mm}} \right)}$$

### 25) Helix Angle of Helical Gear given Virtual Number of Teeth

[Open Calculator !\[\]\(d8ab143e904bfa3467271eec5af75a9b\_img.jpg\)](#)

$$\text{fx } \psi = a \cos \left( \left( \frac{d}{m_n \cdot z'} \right)^{\frac{1}{2}} \right)$$

$$\text{ex } 31.40991^\circ = a \cos \left( \left( \frac{118\text{mm}}{3\text{mm} \cdot 54} \right)^{\frac{1}{2}} \right)$$





## Number of Teeth

### 26) Number of Teeth on First Gear given Center to Center Distance between Two Gears

$$\text{fx } z_1 = a_c \cdot \frac{2 \cdot \cos(\psi)}{m_n} - z_2$$

[Open Calculator !\[\]\(d66ff64371a51729ac8c1cdaa685ba6f\_img.jpg\)](#)

$$\text{ex } 17.99758 = 99.3\text{mm} \cdot \frac{2 \cdot \cos(25^\circ)}{3\text{mm}} - 42$$

### 27) Number of Teeth on Gear given Pitch Circle Diameter

$$\text{fx } z = d \cdot \frac{\cos(\psi)}{m_n}$$

[Open Calculator !\[\]\(faf942dc3e59ce8eb64b4ac481eca7e0\_img.jpg\)](#)

$$\text{ex } 35.64811 = 118\text{mm} \cdot \frac{\cos(25^\circ)}{3\text{mm}}$$

### 28) Number of Teeth on Helical Gear given Speed Ratio for Helical Gears

$$\text{fx } z = Z_p \cdot i$$

[Open Calculator !\[\]\(95b425611cbd2b8716a140cf67c81822\_img.jpg\)](#)

$$\text{ex } 44 = 20 \cdot 2.2$$



### 29) Number of Teeth on Pinion given Speed Ratio

$$fx \quad Z_p = \frac{z}{i}$$

[Open Calculator !\[\]\(0f848bbd71cef6b345273b16f905912a\_img.jpg\)](#)

$$ex \quad 16.81818 = \frac{37}{2.2}$$

### 30) Number of Teeth on Second Helical Gear given Center to Center Distance between Two Gears

$$fx \quad z_2 = a_c \cdot \frac{2 \cdot \cos(\psi)}{m_n} - z_1$$

[Open Calculator !\[\]\(3211b5d1d968fc1665909b34f9f16010\_img.jpg\)](#)

$$ex \quad 41.99758 = 99.3mm \cdot \frac{2 \cdot \cos(25^\circ)}{3mm} - 18$$

### 31) Pitch Circle Diameter of Gear given Addendum Circle Diameter

$$fx \quad d = d_a - 2 \cdot h_a$$

[Open Calculator !\[\]\(9c2e8d1b5bd77cb5c9f83b7a9cff79fd\_img.jpg\)](#)

$$ex \quad 130mm = 138mm - 2 \cdot 4mm$$

### 32) Pitch Circle Diameter of Gear given Dedendum Circle Diameter

$$fx \quad d = d_f + 2 \cdot d_h$$

[Open Calculator !\[\]\(235bfe13ebf007ce2eea9e689707fac7\_img.jpg\)](#)

$$ex \quad 136mm = 126mm + 2 \cdot 5mm$$



## Pitch Circle Diameter

### 33) Pitch Circle Diameter of Gear given Radius of Curvature at Point

$$\text{fx } d = 2 \cdot r' \cdot (\cos(\psi))^2$$

[Open Calculator !\[\]\(a03a7eb2f4046e1d3c76772003e549ea\_img.jpg\)](#)

$$\text{ex } 118.2807\text{mm} = 2 \cdot 72\text{mm} \cdot (\cos(25^\circ))^2$$

### 34) Pitch Circle Diameter of Helical Gear

$$\text{fx } d = z \cdot \frac{m_n}{\cos(\psi)}$$

[Open Calculator !\[\]\(5361750c22c4e047a52f4eac1ec2d4cc\_img.jpg\)](#)

$$\text{ex } 122.4749\text{mm} = 37 \cdot \frac{3\text{mm}}{\cos(25^\circ)}$$

### 35) Pitch Circular Diameter of Gear given Radius of Curvature

$$\text{fx } d' = 2 \cdot r'$$

[Open Calculator !\[\]\(b792654f2cef9719eabeb6c5be00811e\_img.jpg\)](#)

$$\text{ex } 144\text{mm} = 2 \cdot 72\text{mm}$$

### 36) Pitch Circular Diameter of Gear given Virtual Gear

$$\text{fx } d = 2 \cdot r' \cdot (\cos(\psi))^2$$

[Open Calculator !\[\]\(84f47badaad7772cd95667a7c387a639\_img.jpg\)](#)

$$\text{ex } 118.2807\text{mm} = 2 \cdot 72\text{mm} \cdot (\cos(25^\circ))^2$$



### 37) Pitch Circular Diameter of Gear given Virtual Number of Teeth

$$fx \quad d = m_n \cdot z' \cdot \left( \cos(\psi)^2 \right)$$

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95\_img.jpg\)](#)

$$ex \quad 133.0658mm = 3mm \cdot 54 \cdot \left( \cos(25^\circ)^2 \right)$$

### Radius of Curvature

#### 38) Radius of Curvature at Point on Helical Gear

$$fx \quad r' = \frac{a^2}{b}$$

[Open Calculator !\[\]\(aa53ad6fea213b8b2226d3077e30533a\_img.jpg\)](#)

$$ex \quad 69.13636mm = \frac{(19.5mm)^2}{5.5mm}$$

#### 39) Radius of Curvature at Point on Virtual Gear

$$fx \quad r' = \frac{d}{2 \cdot (\cos(\psi))^2}$$

[Open Calculator !\[\]\(626ce8ac21792b9405bfddfea8e0c96a\_img.jpg\)](#)

$$ex \quad 71.82913mm = \frac{118mm}{2 \cdot (\cos(25^\circ))^2}$$



#### 40) Radius of Curvature of Virtual Gear given Pitch Circular Diameter

$$\text{fx } r' = \frac{d'}{2}$$

[Open Calculator !\[\]\(e2376d476d06eb31946dc01a69a4403a\_img.jpg\)](#)

$$\text{ex } 71.5\text{mm} = \frac{143\text{mm}}{2}$$

#### 41) Radius of Curvature of Virtual Gear given Virtual Number of Teeth

$$\text{fx } r_{vh} = z' \cdot \frac{P_N}{2 \cdot \pi}$$

[Open Calculator !\[\]\(0b5e7e25e8775f7e7e80906ada4f0021\_img.jpg\)](#)

$$\text{ex } 82.50592\text{mm} = 54 \cdot \frac{9.6\text{mm}}{2 \cdot \pi}$$

### Tooth Proportions for Helical Gear

#### 42) Actual Number of Teeth on Gear given Virtual Number of Teeth

$$\text{fx } z = (\cos(\psi))^3 \cdot z'$$

[Open Calculator !\[\]\(0fb13ad0bfa3d86868cdd3883e5665b3\_img.jpg\)](#)

$$\text{ex } 40.19952 = (\cos(25^\circ))^3 \cdot 54$$

#### 43) Addendum Circle Diameter of Gear

$$\text{fx } d_a = m_n \cdot \left( \left( \frac{z}{\cos(\psi)} \right) + 2 \right)$$

[Open Calculator !\[\]\(e50091943b385fe16d3277389202856f\_img.jpg\)](#)

$$\text{ex } 128.4749\text{mm} = 3\text{mm} \cdot \left( \left( \frac{37}{\cos(25^\circ)} \right) + 2 \right)$$



#### 44) Addendum Circle Diameter of Gear given Pitch Circle Diameter

$$\text{fx } d_a = 2 \cdot h_a + d$$

[Open Calculator !\[\]\(d3fb9f94af8b26d1c844efa9a98805b0\_img.jpg\)](#)

$$\text{ex } 126\text{mm} = 2 \cdot 4\text{mm} + 118\text{mm}$$

#### 45) Addendum of Gear given Addendum Circle Diameter

$$\text{fx } h_a = \frac{d_a - d}{2}$$

[Open Calculator !\[\]\(e1d6102fe77919492c04879c8450f1f5\_img.jpg\)](#)

$$\text{ex } 10\text{mm} = \frac{138\text{mm} - 118\text{mm}}{2}$$

#### 46) Dedendum Circle Diameter of Gear given Pitch Circle Diameter

$$\text{fx } d_f = d - 2 \cdot d_h$$

[Open Calculator !\[\]\(ab4e2b3fc7e7887b7a72f548aa6f5e60\_img.jpg\)](#)

$$\text{ex } 108\text{mm} = 118\text{mm} - 2 \cdot 5\text{mm}$$

#### 47) Helix Angle of Helical Gear given Addendum Circle Diameter

$$\text{fx } \psi = a \cos \left( \frac{z}{\frac{d_a}{m_n} - 2} \right)$$

[Open Calculator !\[\]\(5abce1a84a655b073239ab33e1199487\_img.jpg\)](#)

$$\text{ex } 32.76376^\circ = a \cos \left( \frac{37}{\frac{138\text{mm}}{3\text{mm}} - 2} \right)$$



#### 48) Normal Module of Helical Gear

$$\text{fx } m_n = m \cdot \cos(\psi)$$

[Open Calculator !\[\]\(9dfdaff1d86ba3c1f8353b4d1b61b8c5\_img.jpg\)](#)

$$\text{ex } 3.081446\text{mm} = 3.4\text{mm} \cdot \cos(25^\circ)$$

#### 49) Normal Module of Helical Gear given Addendum Circle Diameter

$$\text{fx } m_n = \frac{d_a}{\frac{z}{\cos(\psi)} + 2}$$

[Open Calculator !\[\]\(2b376d1a92330ab09dad2665d2f89bf5\_img.jpg\)](#)

$$\text{ex } 3.222418\text{mm} = \frac{138\text{mm}}{\frac{37}{\cos(25^\circ)} + 2}$$

#### 50) Normal Module of Helical Gear given Center to Center Distance between Two Gears

$$\text{fx } m_n = a_c \cdot \frac{2 \cdot \cos(\psi)}{z_1 + z_2}$$

[Open Calculator !\[\]\(c444627dab9fee9a1550c053ffaaaae2\_img.jpg\)](#)

$$\text{ex } 2.999879\text{mm} = 99.3\text{mm} \cdot \frac{2 \cdot \cos(25^\circ)}{18 + 42}$$

#### 51) Normal Module of Helical Gear given Pitch Circle Diameter

$$\text{fx } m_n = d \cdot \frac{\cos(\psi)}{z}$$

[Open Calculator !\[\]\(06a315363e7801bba8c7489a6694af19\_img.jpg\)](#)

$$\text{ex } 2.890387\text{mm} = 118\text{mm} \cdot \frac{\cos(25^\circ)}{37}$$



## 52) Normal Module of Helical Gear given Virtual Number of Teeth

$$\text{fx } m_n = \frac{d}{z'} \cdot (\cos(\psi))^2$$

[Open Calculator !\[\]\(6605b201d6f14d9b3bcb8ab5f274d107\_img.jpg\)](#)

$$\text{ex } 1.794898\text{mm} = \frac{118\text{mm}}{54} \cdot (\cos(25^\circ))^2$$

## 53) Number of Teeth on Gear given Addendum Circle Diameter

$$\text{fx } z = \left( \frac{d_a}{m_n} - 2 \right) \cdot \cos(\psi)$$

[Open Calculator !\[\]\(e8fb589d58dad1692debababa5e928b6\_img.jpg\)](#)

$$\text{ex } 39.87754 = \left( \frac{138\text{mm}}{3\text{mm}} - 2 \right) \cdot \cos(25^\circ)$$

## 54) Virtual Number of Teeth on Helical Gear

$$\text{fx } z' = 2 \cdot \pi \cdot \frac{r_{vh}}{P_N}$$

[Open Calculator !\[\]\(4688aadfd656ded00cd6bdfae55089a9\_img.jpg\)](#)

$$\text{ex } 20.94395 = 2 \cdot \pi \cdot \frac{32\text{mm}}{9.6\text{mm}}$$

## 55) Virtual Number of Teeth on Helical Gear given Actual Number of Teeth

$$\text{fx } z' = \frac{z}{(\cos(\psi))^3}$$

[Open Calculator !\[\]\(4146d17f71dced09c6ad789cacceaa6d\_img.jpg\)](#)

$$\text{ex } 49.70208 = \frac{37}{(\cos(25^\circ))^3}$$





## Variables Used





- **a** Semi Major Axis of Helical Gear Teeth (Millimeter)
- **a<sub>c</sub>** Center to Center Distance of Helical Gears (Millimeter)
- **b** Semi Minor Axis of Helical Gear Teeth (Millimeter)
- **d** Diameter of Pitch Circle of Helical Gear (Millimeter)
- **d'** Pitch Circular Diameter of Helical Virtual Gear (Millimeter)
- **d<sub>a</sub>** Addendum Circle Diameter of Helical Gear (Millimeter)
- **d<sub>f</sub>** Dedendum Circle Diameter of Helical Gear (Millimeter)
- **d<sub>h</sub>** Dedendum of Helical Gear (Millimeter)
- **h<sub>a</sub>** Addendum of Helical Gear (Millimeter)
- **i** Helical Gear Speed Ratio
- **m** Transverse Module of Helical Gear (Millimeter)
- **m<sub>n</sub>** Normal Module of Helical Gear (Millimeter)
- **n<sub>g</sub>** Speed of Helical Gear (Radian per Second)
- **n<sub>p</sub>** Speed of Pinion Helical Gear (Radian per Second)
- **p** Pitch of Helical Gear (Millimeter)
- **P** Transverse Diametrical Pitch of Helical Gear (1 per Millimeter)
- **p<sub>a</sub>** Axial Pitch of Helical Gear (Millimeter)
- **P<sub>N</sub>** Normal Circular Pitch of Helical Gear (Millimeter)
- **r'** Radius of Curvature of Helical Gear (Millimeter)
- **r<sub>vh</sub>** Virtual Pitch Circle Radius for Helical Gear (Millimeter)
- **z** Number of Teeth on Helical Gear
- **z'** Virtual Number of Teeth on Helical Gear



- $Z_1$  Number of Teeth on 1st Helical Gear
- $Z_2$  Number of Teeth on 2nd Helical Gear
- $Z_p$  Number of Teeth on Helical Pinion
- $\alpha$  Transverse Pressure Angle of Helical Gear (Degree)
- $\alpha_n$  Normal Pressure Angle of Helical Gear (Degree)
- $\psi$  Helix Angle of Helical Gear (Degree)




## Constants, Functions, Measurements used

- **Constant:** **pi**, 3.14159265358979323846264338327950288  
*Archimedes' constant*
- **Function:** **acos**, `acos(Number)`  
*Inverse trigonometric cosine function*
- **Function:** **atan**, `atan(Number)`  
*Inverse trigonometric tangent function*
- **Function:** **cos**, `cos(Angle)`  
*Trigonometric cosine function*
- **Function:** **sqrt**, `sqrt(Number)`  
*Square root function*
- **Function:** **tan**, `tan(Angle)`  
*Trigonometric tangent function*
- **Measurement:** **Length** in Millimeter (mm)  
*Length Unit Conversion* 
- **Measurement:** **Angle** in Degree (°)  
*Angle Unit Conversion* 
- **Measurement:** **Angular Velocity** in Radian per Second (rad/s)  
*Angular Velocity Unit Conversion* 
- **Measurement:** **Reciprocal Length** in 1 per Millimeter (mm<sup>-1</sup>)  
*Reciprocal Length Unit Conversion* 



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