



mobius

Trigonometry Identities - Double Angle to Identity (Radians)



$$\tan(2\cdot \frac{\pi}{4})$$

Complete the double-angle identity for this expression

$$\begin{vmatrix} \mathsf{A} & \mathsf{B} \\ & = 2\mathsf{tan}(\frac{\pi}{4})\mathsf{cot}(\frac{\pi}{4}) \\ & = \frac{2\mathsf{tan}(\frac{\pi}{4})}{1 - \mathsf{tan}^2(\frac{\pi}{4})}$$

2

$$\tan(2\cdot\frac{7\pi}{6})$$

Complete the double-angle identity for this expression

$$tan(2 \cdot \frac{\pi}{4}) \Big|_{\substack{A \\ = 2tan(\frac{\pi}{4})cot(\frac{\pi}{4}) = \frac{2tan(\frac{\pi}{4})}{1 - tan^2(\frac{\pi}{4})}}} tan(2 \cdot \frac{7\pi}{6}) \Big|_{\substack{A \\ = \frac{tan(\frac{7\pi}{6})}{1 - 2tan(\frac{7\pi}{6})} = \frac{2tan(\frac{7\pi}{6})}{1 - tan^2(\frac{7\pi}{6})}}} \Big|_{\substack{A \\ = \frac{tan(\frac{7\pi}{6})}{1 - 2tan(\frac{7\pi}{6})} = \frac{2tan(\frac{7\pi}{6})}{1 - tan^2(\frac{7\pi}{6})}}}$$

3

$$\sin(2\cdot\frac{7\pi}{4})^{\frac{1}{A}-\frac{1}{2}} = \frac{2\tan(\frac{7\pi}{4})}{1+\tan^2(\frac{7\pi}{4})} = \frac{2\tan(\frac{7\pi}{4})}{1+\tan^2(\frac{7\pi}{4})}$$

Complete the double-angle identity for this expression

$$=\sin(\frac{7\pi}{4})\cos(\frac{7\pi}{4}) = \frac{2\tan(\frac{7\pi}{4})}{1+\tan^2(\frac{7\pi}{4})}$$

4

$$\tan(2\cdot \frac{7\pi}{4}$$

Complete the double-angle identity for this expression

A B
$$= 2\mathsf{tan}(\frac{7\pi}{4})\mathsf{cot}(\frac{7\pi}{4}) = \frac{2\mathsf{tan}(\frac{7\pi}{4})}{1 - \mathsf{tan}^2(\frac{7\pi}{4})}$$

5

$$\cos(2\cdot\frac{\pi}{6})$$

Complete the double-angle identity for this expression

$$\begin{vmatrix} \mathsf{A} & \mathsf{B} \\ = \cos^2(\frac{\pi}{6}) + \sin^2(\frac{\pi}{6}) \\ = \frac{1 - \tan^2(\frac{\pi}{6})}{1 + \tan^2(\frac{\pi}{6})}$$

6

$$\cos(2\cdot\frac{\pi}{6})^{\frac{1}{A}} = \cos^2(\frac{\pi}{6}) + \sin^2(\frac{\pi}{6}) = \frac{1-\tan^2(\frac{\pi}{6})}{1+\tan^2(\frac{\pi}{6})} = \frac{5\pi}{4}$$

Complete the double-angle

A B
$$= 2\cos^2(\frac{5\pi}{4}) + 1 = 1 - 2\sin^2(\frac{5\pi}{4})$$

7

$$\cos(2\cdot\frac{5\pi}{3}) = \frac{\tan^2(\frac{5\pi}{3})-1}{1+\tan^2(\frac{5\pi}{3})} = \cos^2(\frac{5\pi}{3})-\sin^2(\frac{5\pi}{3})$$

$$\tan(2\cdot\frac{4\pi}{3})$$

$$= \frac{\tan^2(\frac{5\pi}{3})-1}{1+\tan^2(\frac{5\pi}{3})} = \cos^2(\frac{5\pi}{3})-\sin^2(\frac{5\pi}{3})$$

Complete the double-angle identity for this expression

$$egin{aligned} \mathsf{A} & \mathsf{B} \ &= rac{\mathsf{tan}^2ig(rac{5\pi}{3}ig) - 1}{1 + \mathsf{tan}^2ig(rac{5\pi}{3}ig)} = \cos^2(rac{5\pi}{3}) - \sin^2(rac{5\pi}{3}) \end{aligned}$$

8

$$\tan(2\cdot\frac{4\pi}{3})$$

Complete the double-angle identity for this expression

A B
$$= 2\tan(\frac{4\pi}{3})\cot(\frac{4\pi}{3}) = \frac{2\tan(\frac{4\pi}{3})}{1-\tan^2(\frac{4\pi}{3})}$$