

3° の倍数角の三角比の値

度	sin	tan
0°	0	0
3°	$\frac{-(1+\sqrt{3})(1-\sqrt{5})+\sqrt{2}(1-\sqrt{3})\sqrt{5+\sqrt{5}}}{8\sqrt{2}}$	$\frac{-\sqrt{2}(\sqrt{2}-\sqrt{5-\sqrt{5}})}{2\sqrt{3}+1+\sqrt{5}}$
6°	$\frac{-(1+\sqrt{5})+\sqrt{6}\sqrt{5-\sqrt{5}}}{8}$	$\frac{\sqrt{3}(1-\sqrt{5})+\sqrt{2}\sqrt{5-\sqrt{5}}}{2}$
9°	$\frac{1+\sqrt{5}-\sqrt{2}\sqrt{5-\sqrt{5}}}{4\sqrt{2}}$	$1+\sqrt{5}-\sqrt{5+2\sqrt{5}}$
12°	$\frac{\sqrt{3}(1-\sqrt{5})+\sqrt{2}\sqrt{5+\sqrt{5}}}{8}$	$\frac{-(2-\sqrt{5})\{\sqrt{3}(1+\sqrt{5})-\sqrt{2}\sqrt{5+\sqrt{5}}\}}{2}$
15°	$\frac{-1+\sqrt{3}}{2\sqrt{2}}$	$2-\sqrt{3}$
18°	$\frac{-1+\sqrt{5}}{4}$	$\frac{\sqrt{5-2\sqrt{5}}}{\sqrt{5}}$
21°	$\frac{(1-\sqrt{3})(1+\sqrt{5})+\sqrt{2}(1+\sqrt{3})\sqrt{5-\sqrt{5}}}{8\sqrt{2}}$	$\frac{-\sqrt{2}(\sqrt{2}-\sqrt{5+\sqrt{5}})}{2\sqrt{3}-(1-\sqrt{5})}$
24°	$\frac{\sqrt{3}(1+\sqrt{5})-\sqrt{2}\sqrt{5-\sqrt{5}}}{8}$	$\frac{(2+\sqrt{5})\{\sqrt{3}(1-\sqrt{5})+\sqrt{2}\sqrt{5-\sqrt{5}}\}}{2}$
27°	$\frac{1-\sqrt{5}+\sqrt{2}\sqrt{5+\sqrt{5}}}{4\sqrt{2}}$	$-(1-\sqrt{5})-\sqrt{5-2\sqrt{5}}$
30°	$\frac{1}{2}$	$\frac{1}{\sqrt{3}}$
33°	$\frac{-(1+\sqrt{3})(1-\sqrt{5})-\sqrt{2}(1-\sqrt{3})\sqrt{5+\sqrt{5}}}{8\sqrt{2}}$	$\frac{\sqrt{2}(\sqrt{2}+\sqrt{5-\sqrt{5}})}{2\sqrt{3}+1+\sqrt{5}}$
36°	$\frac{\sqrt{5-\sqrt{5}}}{2\sqrt{2}}$	$\sqrt{5-2\sqrt{5}}$
39°	$\frac{(1+\sqrt{3})(1+\sqrt{5})+\sqrt{2}(1-\sqrt{3})\sqrt{5-\sqrt{5}}}{8\sqrt{2}}$	$\frac{-\sqrt{2}(\sqrt{2}-\sqrt{5+\sqrt{5}})}{2\sqrt{3}+1-\sqrt{5}}$
42°	$\frac{1-\sqrt{5}+\sqrt{6}\sqrt{5+\sqrt{5}}}{8}$	$\frac{\sqrt{3}(1+\sqrt{5})-\sqrt{2}\sqrt{5+\sqrt{5}}}{2}$
45°	$\frac{1}{\sqrt{2}}$	1

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45°	$\frac{1}{\sqrt{2}}$	1
48°	$\frac{-\sqrt{3}(1-\sqrt{5})+\sqrt{2}\sqrt{5+\sqrt{5}}}{8}$	$\frac{-(2-\sqrt{5})\{\sqrt{3}(1+\sqrt{5})+\sqrt{2}\sqrt{5+\sqrt{5}}\}}{2}$
51°	$\frac{-(1-\sqrt{3})(1+\sqrt{5})+\sqrt{2}(1+\sqrt{3})\sqrt{5-\sqrt{5}}}{8\sqrt{2}}$	$\frac{\sqrt{2}(\sqrt{2}+\sqrt{5+\sqrt{5}})}{2\sqrt{3}-(1-\sqrt{5})}$
54°	$\frac{1+\sqrt{5}}{4}$	$\frac{\sqrt{5+2\sqrt{5}}}{\sqrt{5}}$
57°	$\frac{-(1-\sqrt{3})(1-\sqrt{5})+\sqrt{2}(1+\sqrt{3})\sqrt{5+\sqrt{5}}}{8\sqrt{2}}$	$\frac{-\sqrt{2}(\sqrt{2}-\sqrt{5-\sqrt{5}})}{2\sqrt{3}-(1+\sqrt{5})}$
60°	$\frac{\sqrt{3}}{2}$	$\sqrt{3}$
63°	$\frac{-(1-\sqrt{5})+\sqrt{2}\sqrt{5+\sqrt{5}}}{4\sqrt{2}}$	$-(1-\sqrt{5})-\sqrt{5-2\sqrt{5}}$
66°	$\frac{1+\sqrt{5}+\sqrt{6}\sqrt{5-\sqrt{5}}}{8}$	$\frac{-\sqrt{3}(1-\sqrt{5})+\sqrt{2}\sqrt{5-\sqrt{5}}}{2}$
69°	$\frac{(1+\sqrt{3})(1+\sqrt{5})-\sqrt{2}(1-\sqrt{3})\sqrt{5-\sqrt{5}}}{8\sqrt{2}}$	$\frac{\sqrt{2}(\sqrt{2}+\sqrt{5+\sqrt{5}})}{2\sqrt{3}+1-\sqrt{5}}$
72°	$\frac{\sqrt{5+\sqrt{5}}}{2\sqrt{2}}$	$\sqrt{5+2\sqrt{5}}$
75°	$\frac{1+\sqrt{3}}{2\sqrt{2}}$	$2+\sqrt{3}$
78°	$\frac{-(1-\sqrt{5})+\sqrt{6}\sqrt{5+\sqrt{5}}}{8}$	$\frac{\sqrt{3}(1+\sqrt{5})+\sqrt{2}\sqrt{5+\sqrt{5}}}{2}$
81°	$\frac{1+\sqrt{5}+\sqrt{2}\sqrt{5-\sqrt{5}}}{4\sqrt{2}}$	$1+\sqrt{5}+\sqrt{5+2\sqrt{5}}$
84°	$\frac{\sqrt{3}(1+\sqrt{5})+\sqrt{2}\sqrt{5-\sqrt{5}}}{8}$	$\frac{-(2+\sqrt{5})\{\sqrt{3}(1-\sqrt{5})-\sqrt{2}\sqrt{5-\sqrt{5}}\}}{2}$
87°	$\frac{(1-\sqrt{3})(1-\sqrt{5})+\sqrt{2}(1+\sqrt{3})\sqrt{5+\sqrt{5}}}{8\sqrt{2}}$	$\frac{\sqrt{2}(\sqrt{2}+\sqrt{5-\sqrt{5}})}{2\sqrt{3}-(1+\sqrt{5})}$
90°	1	-

$$2\sqrt{5+\sqrt{5}} = (1+\sqrt{5})\sqrt{5-\sqrt{5}}$$

$$2\sqrt{5-\sqrt{5}} = -(1-\sqrt{5})\sqrt{5+\sqrt{5}}$$

$$2\sqrt{2}\sqrt{5+2\sqrt{5}} = (3+\sqrt{5})\sqrt{5-\sqrt{5}}$$

$$2\sqrt{2}\sqrt{5-2\sqrt{5}} = (3-\sqrt{5})\sqrt{5+\sqrt{5}}$$

$$2(2\sqrt{3}+1+\sqrt{5}) = -(1+\sqrt{3})(1-\sqrt{5})(\sqrt{3}+\sqrt{5})$$

$$2(2\sqrt{3}+1-\sqrt{5}) = -(1+\sqrt{3})(1+\sqrt{5})(\sqrt{3}-\sqrt{5})$$

$$2(2\sqrt{3}-(1+\sqrt{5})) = -(1-\sqrt{3})(1-\sqrt{5})(\sqrt{3}-\sqrt{5})$$

$$2(2\sqrt{3}-(1-\sqrt{5})) = -(1-\sqrt{3})(1+\sqrt{5})(\sqrt{3}+\sqrt{5})$$