

| SOMMA E DIFFERENZA DI ARCHI   | MOLTIPLICAZIONE DI ARCHI   | FORMULE PARAMETRICHE   |
|---|--|--|
| $\cos(\alpha - \beta) = \cos\alpha \cos\beta + \sin\alpha \sin\beta$  | $\sin 2\alpha = 2\sin\alpha \cos\alpha$  | $\sin\alpha = \frac{2\operatorname{tg}\frac{\alpha}{2}}{1 + \operatorname{tg}^2\frac{\alpha}{2}}$                |
| $\cos(\alpha + \beta) = \cos\alpha \cos\beta - \sin\alpha \sin\beta$  | $\cos 2\alpha = \cos^2\alpha - \sin^2\alpha$   | $\cos\alpha = \frac{1 - \operatorname{tg}^2\frac{\alpha}{2}}{1 + \operatorname{tg}^2\frac{\alpha}{2}}$           |
| $\sin(\alpha \pm \beta) = \sin\alpha \cos\beta \pm \cos\alpha \sin\beta$  | $\cos 2\alpha = 2\cos^2\alpha - 1$   | $\operatorname{tg}\alpha = \frac{2\operatorname{tg}\frac{\alpha}{2}}{1 - \operatorname{tg}^2\frac{\alpha}{2}}$   |
| $\operatorname{tg}(\alpha \pm \beta) = 1 \pm \frac{\operatorname{tg}\alpha \pm \operatorname{tg}\beta}{1 \mp \operatorname{tg}\alpha \operatorname{tg}\beta}$     | $\cos 2\alpha = 1 - 2\sin^2\alpha$   | $\operatorname{cotg}\alpha = \frac{1 - \operatorname{tg}^2\frac{\alpha}{2}}{2\operatorname{tg}\frac{\alpha}{2}}$ |
| $\operatorname{cotg}(\alpha \pm \beta) = \frac{\operatorname{cotg}\alpha \operatorname{cotg}\beta \mp 1}{\operatorname{cotg}\beta \pm \operatorname{cotg}\alpha}$ | $\operatorname{tg} 2\alpha = \frac{2\operatorname{tg}\alpha}{1 - \operatorname{tg}^2\alpha}$       |  |
|   | $\operatorname{cotg} 2\alpha = \frac{\operatorname{cotg}^2\alpha - 1}{2\operatorname{cotg}\alpha}$ |  |

| FORMULE BISEZIONE  | FORMULE DI PROSTAFERESI   | FORMULE DI WERNER  |
|--|---|--|
| $\sin\frac{\alpha}{2} = \pm \sqrt{\frac{1 - \cos\alpha}{2}}$                             | $\sin p + \sin q = 2\sin\frac{p+q}{2}\cos\frac{p-q}{2}$                                 | $\sin\alpha \cos\beta = \frac{1}{2}[\sin(\alpha + \beta) + \sin(\alpha - \beta)]$  |
| $\cos\frac{\alpha}{2} = \pm \sqrt{\frac{1 + \cos\alpha}{2}}$                             | $\sin p - \sin q = 2\cos\frac{p+q}{2}\sin\frac{p-q}{2}$                                 | $\cos\alpha \cos\beta = \frac{1}{2}[\cos(\alpha + \beta) + \cos(\alpha - \beta)]$  |
| $\operatorname{tg}\frac{\alpha}{2} = \pm \sqrt{\frac{1 - \cos\alpha}{1 + \cos\alpha}}$   | $\cos p + \cos q = 2\cos\frac{p+q}{2}\cos\frac{p-q}{2}$                                 | $\sin\alpha \sin\beta = -\frac{1}{2}[\cos(\alpha + \beta) - \cos(\alpha - \beta)]$ |
| $\operatorname{cotg}\frac{\alpha}{2} = \pm \sqrt{\frac{1 + \cos\alpha}{1 - \cos\alpha}}$ | $\cos p - \cos q = -2\sin\frac{p+q}{2}\sin\frac{p-q}{2}$                                |  |
|  | $\operatorname{tg} p \pm \operatorname{tg} q = \frac{\sin(p \pm q)}{\cos p \cos q}$     |  |
|  | $\operatorname{cotg} p \pm \operatorname{cotg} q = \frac{\sin(p \pm q)}{\sin p \sin q}$ |  |
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