

Первая основная формула (основное тригонометрическое тождество)

$$\cos^2(x) + \sin^2(x) = 1$$

Вторая основная формула в 4-х лицах

$$1) \sin(x+y) = \sin x \cos y + \cos x \sin y$$

$$2) \sin(x-y) = \sin(x+(-y)) = \sin x \cos(-y) + \sin(-y) \cos x = \sin x \cos y - \sin y \cos x$$

$$5) \sin(P/2-x) = \sin(P/2) \cos x - \cos(P/2) \sin x = \cos x$$

$$6) \cos(P/2-x) = \sin(P/2-P/2+x) = \sin x$$

$$3) \cos(x+y) = \sin(P/2-x-y) = \sin((P/2-x)-y) = \sin(P/2-x) \cos y - \cos(P/2-x) \sin y = \cos x \cos y - \sin x \sin y$$

$$4) \cos(x-y) = \cos(x+(-y)) = \cos x \cos(-y) - \sin x \sin(-y) = \cos x \cos y + \sin x \sin y$$

Формулы двойных углов

$$7) \sin 2x = \sin(x+x) = 2 \sin x \cos x$$

$$8) \cos 2x = \cos(x+x) = \cos^2(x) - \sin^2(x)$$

$$9) \cos 2x = \cos^2(x) - \sin^2(x) = 2 \cos^2(x) - 1$$

$$\cos^2(x) + \sin^2(x) = 1$$

$$\sin^2(x) = 1 - \cos^2(x)$$

$$10) \cos 2x = \cos^2(x) - \sin^2(x) = 1 - 2 \sin^2(x)$$

$$\cos^2(x) + \sin^2(x) = 1$$

Формулы понижения степени

$$11) \cos^2(x) = (1 + \cos 2x) / 2$$

$$12) \sin^2(x) = (1 - \cos 2x) / 2$$

Формулы тройных углов

$$13) \sin 3x = \sin(2x+x) = \sin 2x \cos x + \cos 2x \sin x = 2 \sin x \cos^2(x) + (1 - 2 \sin^2(x)) \sin x = 2 \sin x (1 - \sin^2(x)) + (1 - 2 \sin^2(x)) \sin x = 2 \sin x - 2 \sin^3(x) + \sin x - 2 \sin^3(x) = 3 \sin x - 4 \sin^3(x)$$

$$14) \cos 3x = \cos(2x+x) = \cos 2x \cos x - \sin 2x \sin x = (2 \cos^2(x) - 1) \cos x - 2 \sin^2(x) \cos x = (2 \cos^2(x) - 1) \cos x - (2 - 2 \cos^2(x)) \cos x = 2 \cos^3(x) - \cos x - 2 \cos x + 2 \cos^3(x) = 4 \cos^3(x) - 3 \cos x$$

Формулы понижения 3-ей степени

$$15) \sin^3(x) = (3 \sin x - \sin 3x) / 4$$

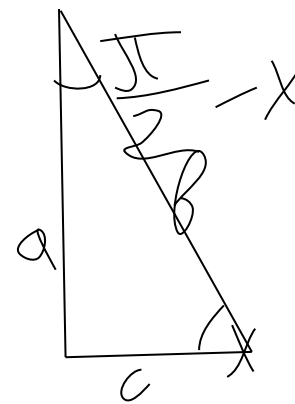
$$16) \cos^3(x) = (\cos 3x + 3 \cos x) / 4$$

$$\sin(P/2-x) = \cos x$$

$$\cos(P/2-x) = \sin x$$

$$\sin x = a/b = \cos(P/2-x)$$

$$\cos x = c/b = \sin(P/2-x)$$



$$17) \sin x + \sin y = 2 \sin((x+y)/2) \cos((x-y)/2)$$

$$1)+2)$$

$$\sin(x+y) + \sin(x-y) = \sin x \cos y + \cos x \sin y + \sin x \cos y - \sin y \cos x = 2 \sin x \cos y$$

$$x+y=k$$

$$x-y=t$$

$$2x=k+t$$

$$x=(k+t)/2$$

$$y=(k-t)/2$$

$$\sin(x+y) + \sin(x-y) = 2 \sin x \cos y$$

$$\sin k + \sin t = 2 \sin((k+t)/2) \cos((k-t)/2)$$

$$19) \sin x - \sin y = 2 \sin((x-y)/2) \cos((x+y)/2)$$

$$1)-2)$$

$$\sin(x+y) - \sin(x-y) = \sin x \cos y + \cos x \sin y - \sin x \cos y + \sin y \cos x = 2 \sin y \cos x$$

$$x+y=k$$

$$x-y=t$$

$$2x=k+t$$

$$x=(k+t)/2$$

$$y=(k-t)/2$$

$$\sin(x+y) - \sin(x-y) = 2 \sin y \cos x$$

$$\sin k - \sin t = 2 \sin((k-t)/2) \cos((k+t)/2)$$

$$18) \cos x + \cos y = 2 \cos((x+y)/2) \cos((x-y)/2)$$

$$3)+4)$$

$$\cos(x+y) + \cos(x-y) = \cos x \cos y - \sin x \sin y + \cos x \cos y + \sin x \sin y = 2 \cos x \cos y$$

$$x+y=k$$

$$x-y=t$$

$$2x=k+t$$

$$x=(k+t)/2$$

$$y=(k-t)/2$$

$$\cos(x+y) + \cos(x-y) = 2 \cos x \cos y$$

$$\cos k + \cos t = 2 \cos((k+t)/2) \cos((k-t)/2)$$

$$20) \cos x - \cos y = -2 \sin((x+y)/2) \sin((x-y)/2)$$

$$3)-4)$$

$$\cos(x+y) - \cos(x-y) = \cos x \cos y - \sin x \sin y - \cos x \cos y - \sin x \sin y = -2 \sin x \sin y$$

$$x+y=k$$

$$x-y=t$$

$$2x=k+t$$

$$x=(k+t)/2$$

$$y=(k-t)/2$$

$$\cos(x+y) - \cos(x-y) = -2 \sin x \sin y$$

$$\cos k - \cos t = -2 \sin((k+t)/2) \sin((k-t)/2)$$

$$1) \sin(x+y) = \sin x \cos y + \cos x \sin y$$

$$2) \sin(x-y) = \sin x \cos y - \sin y \cos x$$

$$3) \cos(x+y) = \cos x \cos y - \sin x \sin y$$

$$4) \cos(x-y) = \cos x \cos y + \sin x \sin y$$

$$21) \sin x \cos y = (1/2) (\sin(x+y) + \sin(x-y))$$

$$\sin x + \sin y = 2 \sin((x+y)/2) \cos((x-y)/2)$$

$$\sin((x+y)/2) \cos((x-y)/2) = (1/2) (\sin x + \sin y)$$

$$(x+y)/2 = k \mid x+y = 2k$$

$$(x-y)/2 = t \mid x-y = 2t$$

$$x = k+t$$

$$y = k-t$$

$$\sin((x+y)/2) \cos((x-y)/2) = (1/2) (\sin x + \sin y)$$

$$\sin k \cos t = (1/2) (\sin(k+t) + \sin(k-t))$$

$$22) \cos x \cos y = (1/2) (\cos(x+y) + \cos(x-y))$$

$$\cos x + \cos y = 2 \cos((x+y)/2) \cos((x-y)/2)$$

$$\cos((x+y)/2) \cos((x-y)/2) = (1/2) (\cos x + \cos y)$$

$$(x+y)/2 = k$$

$$(x-y)/2 = t$$

$$x = k+t$$

$$y = k-t$$

$$\cos k \cos t = (1/2) (\cos(k+t) + \cos(k-t))$$

$$23) \sin x \sin y = 1/2 (\cos(x-y) - \cos(x+y))$$

$$\cos x - \cos y = -2 \sin((x+y)/2) \sin((x-y)/2)$$

$$\sin((x+y)/2) \sin((x-y)/2) = -1/2 (\cos x - \cos y)$$

$$(x+y)/2 = k$$

$$(x-y)/2 = t$$

$$x = k+t$$

$$y = k-t$$

$$\sin k \sin t = -1/2 (\cos(k+t) - \cos(k-y))$$