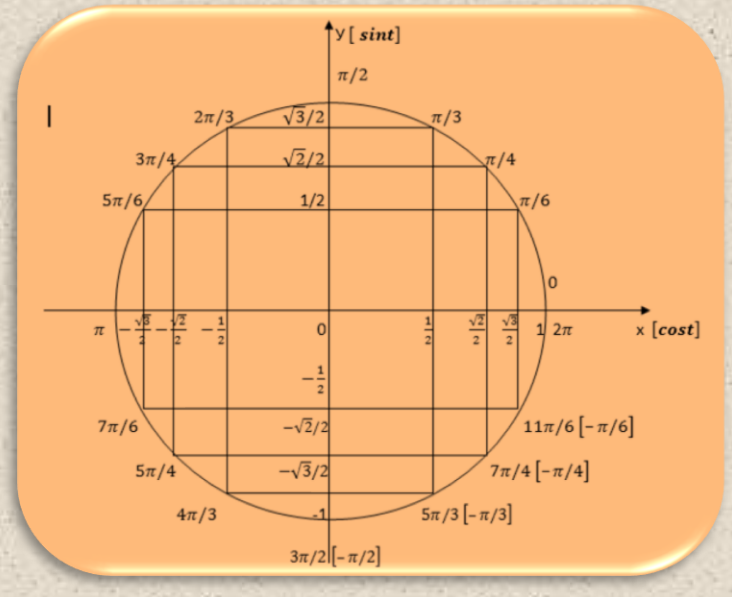
Тригонометрия

Числовая окружность. Формулы.



$$sin^2 t + cos^2 t = 1$$

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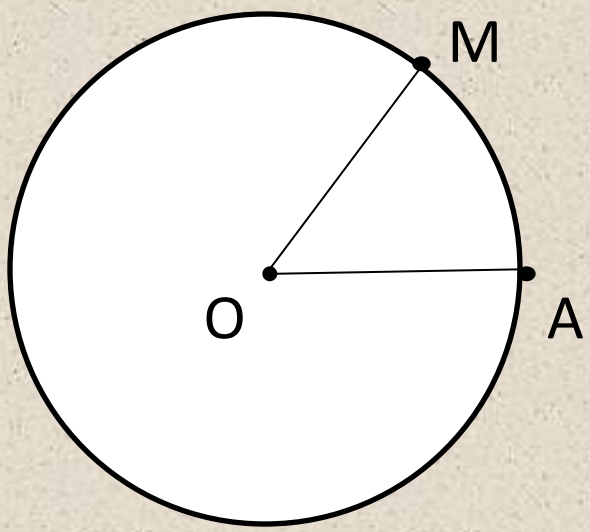
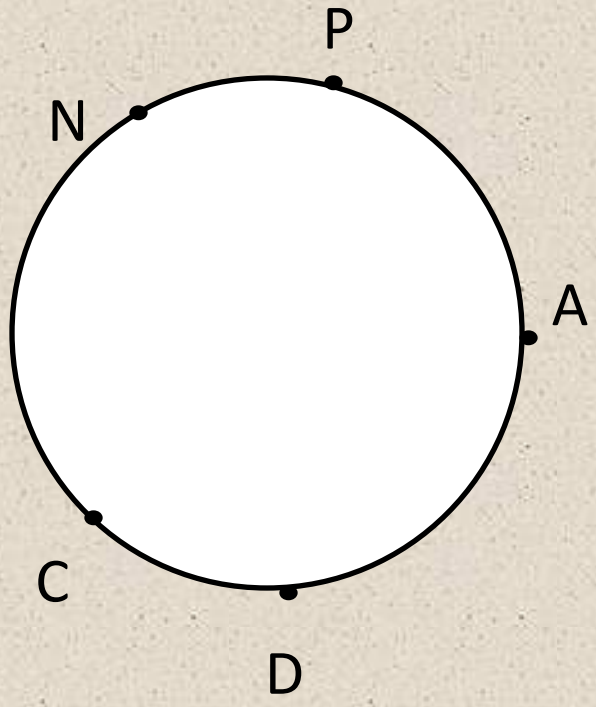
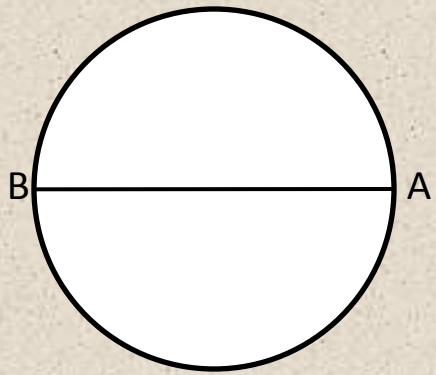
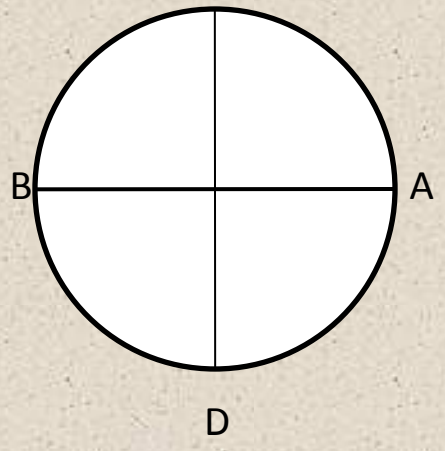
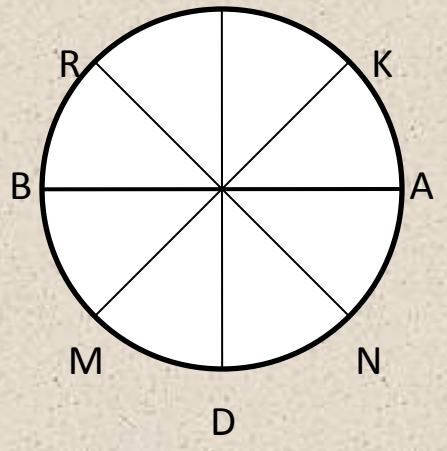
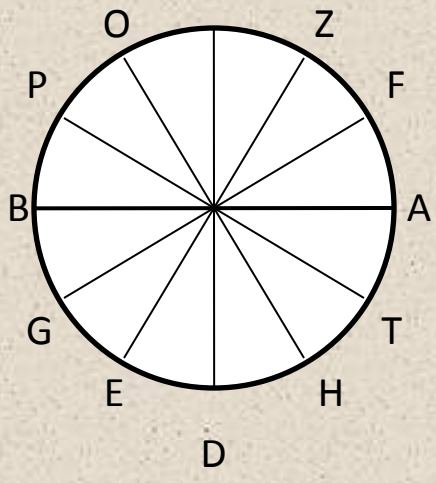

M
O
A

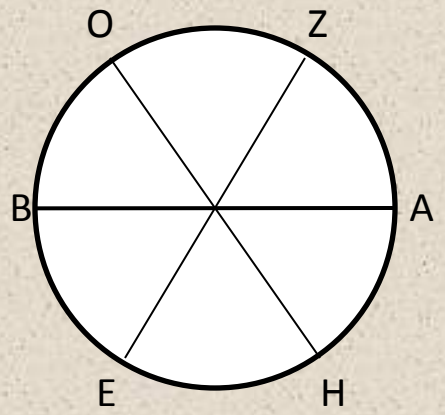

P
N
A
C
D











: 2)AD

3)AR, KM, ND, AM, NA

4)AO, AG, CB, CE, AT, AE, PE

5)AZ, ZB, AB, ZH, OZ

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t)

1)t = 1; 4; - 3

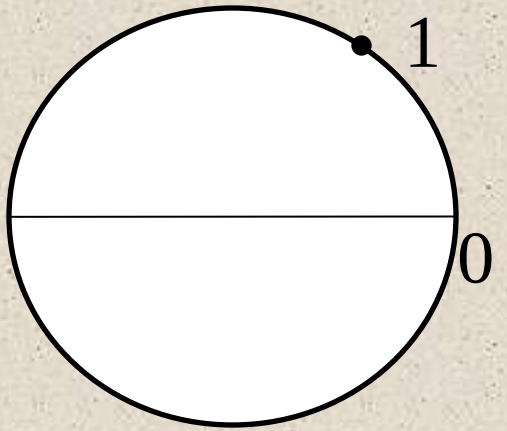
2)t = ; /3; - /6; 7

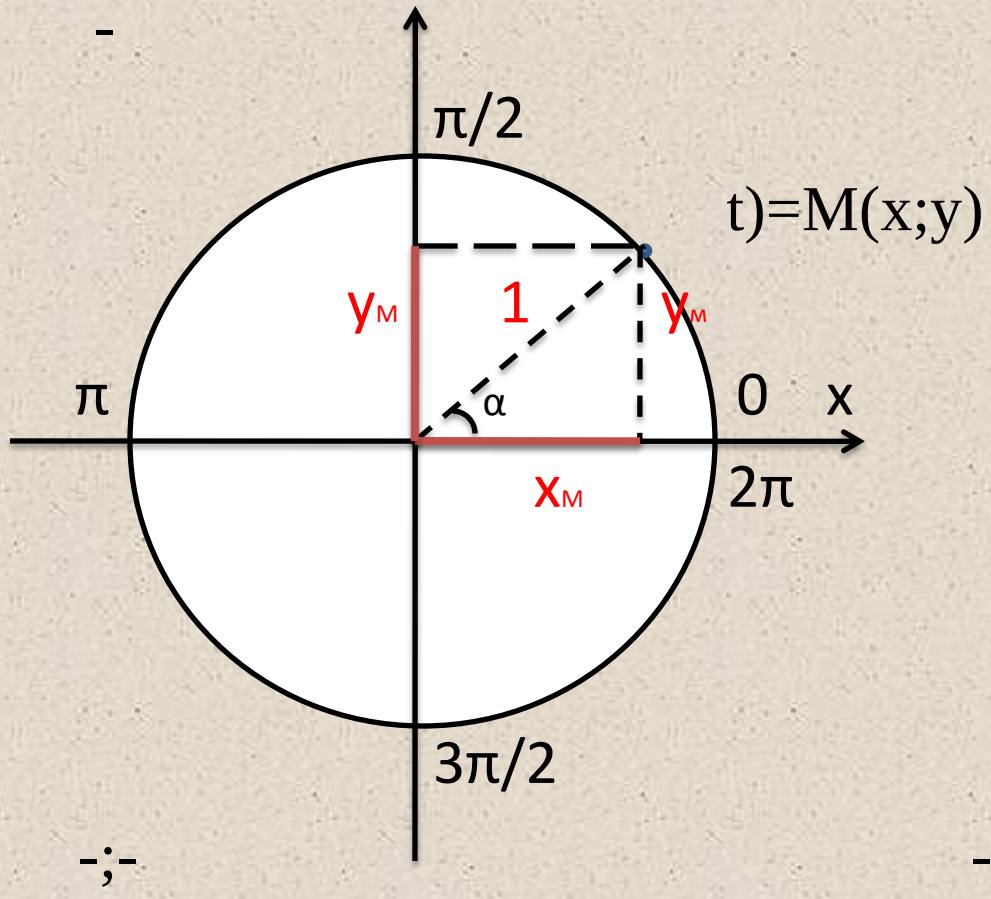
3)t = - 0,5 ; 2,5 ; - 0,75

4)t = 2 /3; - 5 /6; 7 /4;

5)t = - 11 /3; 25 /6; 19 /4

3,14



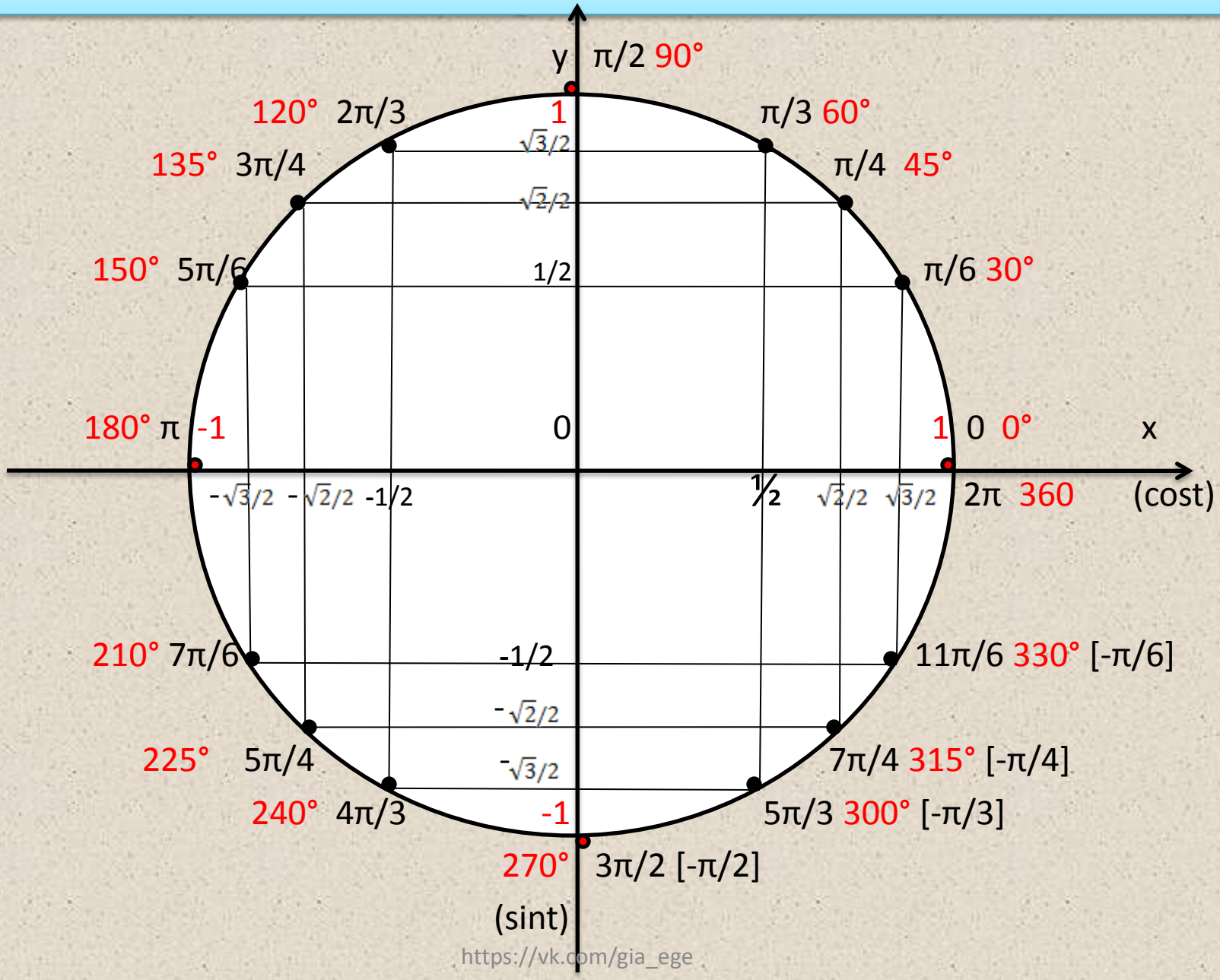


= cos = cost

$y_м$= sin = sint

= tgt

x/y = ctgt



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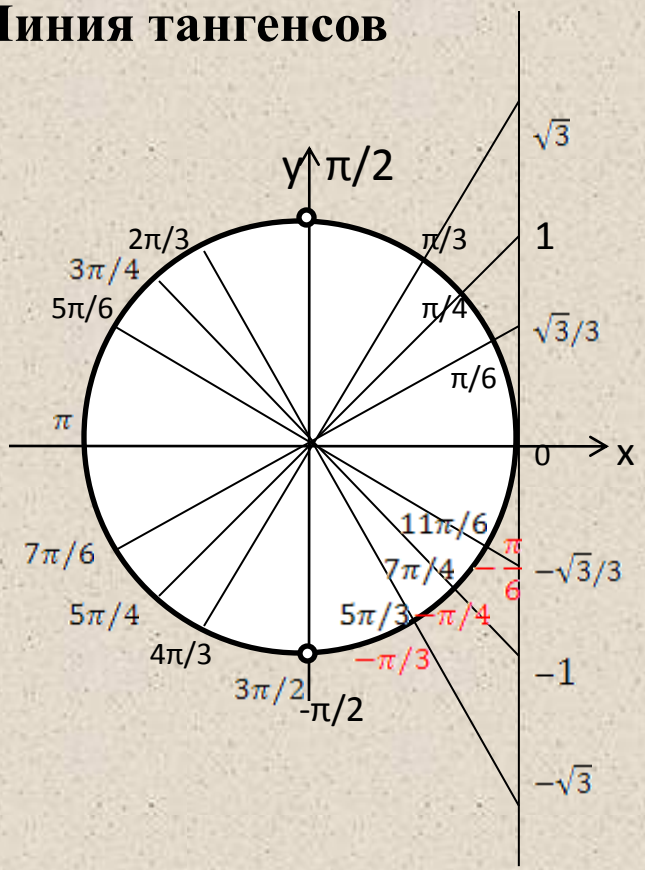
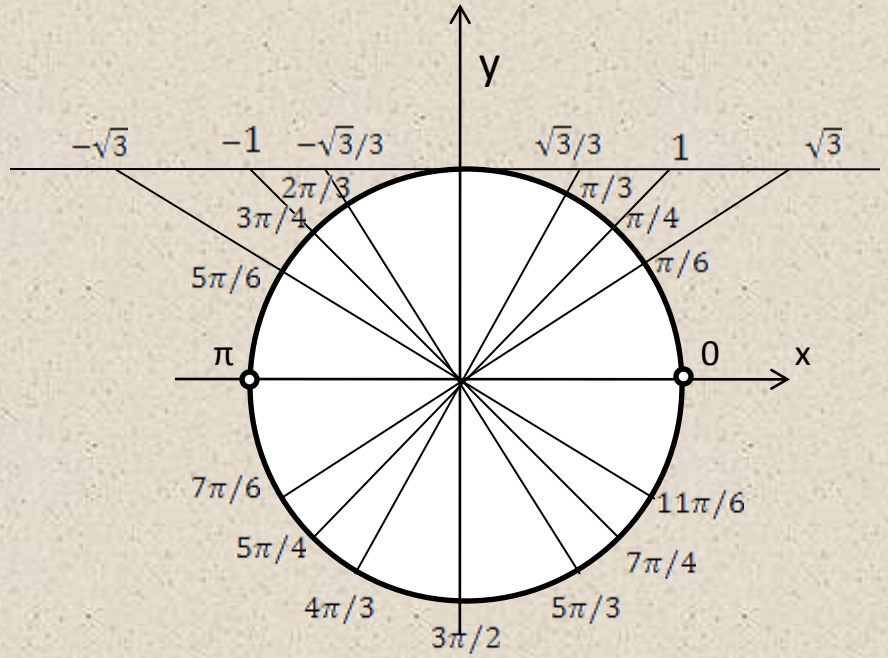
Линия тангенсов

tg t R t ‡ π/2 + π k, k∈Z



ctg t R, t ‡ 0 + πk, k∈Z

Линия котангенсов



1.sint > 0 cost > 0

sint < 0 cost < 0

sint [-1;1] cost [-1;1]

1)$\sin^2 t + \cos^2 t = 1$

2) $y^2 + x^2 = 1$

3. tgt > 0 tgt > 0

tgt < 0 tgt < 0

tgt R ctgt R

3)tgt = sint/cost ; ctgt = cost/sint

4)tgt = y/x ; ctgt = x/y

5)tgt·ctgt = 1

1.____: cost=0,4; 90 <t<180

_____: sint .

_____:

1_____.

1)

-

- 0,16,

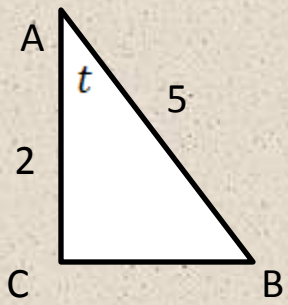
t 2 sint>0

sint=+ $\sqrt{0,84}$

sint = $\sqrt{\frac{84}{100}} = \sqrt{\frac{21}{25}} = \frac{\sqrt{21}}{5}$

$\frac{\sqrt{21}}{5}$.

_____. cos$t$ = 2/5 ; $= \sqrt{5^2 - 2^2} = \sqrt{21}$



t 2 sin t>0 sin t= $\frac{\sqrt{21}}{5}$

Ответ: $\frac{\sqrt{21}}{5}$.

1. $sin^2t + cos^2t = 1$, $1 - sin^2t = cos^2t$

$1 - cos^2t = sin^2t$

2. $tgt = \frac{sint}{cost}$

3. $ctgt = \frac{cost}{sint}$

4. $tgt \cdot ctgt = 1$

5. $tg^2t + 1 = \frac{1}{cos^2t}$

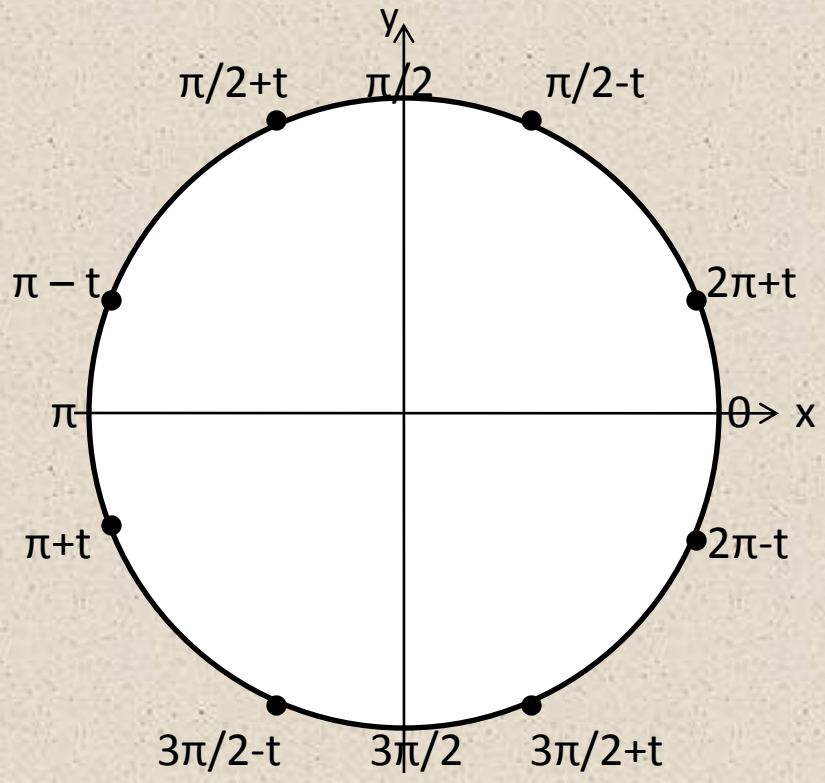
6. $ctg^2t + 1 = \frac{1}{sin^2t}$

7. $\sin(-t) = -sint$

8. $tg(-t) = -tgt$

9. $ctg(-t) = -ctgt$

10. $\cos(-t) = cost$



1).

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

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

3. $\sin(x - y) = \sin x \cdot \cos y - \sin y \cdot \cos x$

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

5. $tg(x + y) = \dfrac{tgx + tgy}{1 - tgx \cdot tgy}$

6. $tgt(x - y) = \dfrac{tgx - tgy}{1 + tgx \cdot tgy}$

1. $\sin 2x = 2\sin x \cdot \cos x$;

2. $\cos 2x = \cos^2 x - \sin^2 x$;

3. $\cos 2x = 1 - 2\sin^2 x$;

4. $\cos 2x = 2\cos^2 x - 1$;

5. $tg2x = \dfrac{2tgx}{1 - tg^2 x}$;

6. $\sin^2 x = \dfrac{1 - \cos 2x}{2}$

7. $\cos^2 x = \dfrac{1 + \cos 2x}{2}$

1. $sinx + siny = 2sin\frac{x+y}{2} \cdot cos\frac{x-y}{2}$

2. $sinx - siny = 2sin\frac{x-y}{2} \cdot cos\frac{x+y}{2}$

3. $cosx + cosy = 2cos\frac{x+y}{2} \cdot cos\frac{x-y}{2}$

4. $cosx - cosy = -2sin\frac{x+y}{2} \cdot sin\frac{x-y}{2}$

5. $Acosx + Bsinx = \sqrt{A^2 + B^2}\cos(x - \varphi)$, где

$\varphi = arccos\frac{A}{\sqrt{A^2 + B^2}}$ - *вспомогательный угол*