

## Homework:

- Ex 15 p 155 nr's 2, 5, 7, 8
- Ex 16 p 157 nr's 3, 6, 9
- Ex 17 p 158 nr's 3, 4, 5, 8

## Memo:

\* Ex 15  $\rightarrow x \in [0; 360^\circ]$  \* get general solution 1st, then subs so specific solutions can be found.

2)  $\tan x = -2,41$

$$\text{ref} = 180 - 67,464 \dots$$

$$\text{ref} = 112,5354 \dots$$

2nd

$$x = 180 - \text{ref} + k \cdot 180^\circ$$

$$x = 67,46 + k \cdot 180^\circ$$

4th

$$x = 360 - \text{ref} + k \cdot 180^\circ$$

$$x = 247,46 + k \cdot 180^\circ$$

$$\therefore x = 67,46$$

$$x = 247,46$$

$$5) \tan x = 3,526$$

$$\text{ref} = 74,16626 \dots$$

1st

$$x = 74,17 + k \cdot 180^\circ$$

3rd

$$x = 180 + \text{ref} + k \cdot 180^\circ$$

$$x = 254,17 + k \cdot 180^\circ$$

$$\therefore x = 74,17$$

$$x = 254,17$$

$$7) 3 \sin x + 1 = -1$$

$$3 \sin x = -2$$

$$\sin x = -\frac{2}{3}$$

$$\text{ref} = 180 - 41,81031 \dots$$

$$\text{ref} = 138,18968 \dots$$

3rd

$$x = 180^\circ + \text{ref} + k \cdot 360^\circ$$

$$x = 318,19 + k \cdot 360^\circ$$

4th

$$x = 360 - \text{ref} + k \cdot 360$$

$$x = 221,81 + k \cdot 360$$

$$\therefore x = 318,19$$

$$x = 221,81$$

$$\begin{aligned} 8) \quad 5 \tan x - 7 &= 2 \\ 5 \tan x &= 9 \\ \tan x &= \frac{9}{5} \end{aligned}$$

$$\text{ref} = 60,94539 \dots$$

1st

$$x = 60,95 + k \cdot 180^\circ$$

3rd

$$x = 180^\circ + \text{ref} + k \cdot 180^\circ$$

$$x = 240,95^\circ + k \cdot 180^\circ$$

$$\therefore x = 60,95$$

$$x = 240,95$$

• Exc 16 ,  $x \in [-360^\circ; 360^\circ]$

3)  $\tan(x + 40^\circ) = -1$

$$\text{ref} = 180^\circ - 45^\circ = 135^\circ$$

2nd

$$x + 40^\circ = 180^\circ - \text{ref} + k \cdot 180^\circ$$

$$x + 40^\circ = 45^\circ + k \cdot 180^\circ$$

$$x = 5^\circ + k \cdot 180^\circ$$

4th

$$x + 40^\circ = 360^\circ - \text{ref} + k \cdot 180^\circ$$

$$x + 40^\circ = 225^\circ + k \cdot 180^\circ$$

$$x = 185^\circ + k \cdot 180^\circ$$

$$\therefore x = -355^\circ$$

$$x = -175^\circ$$

$$x = 5^\circ$$

$$x = 185^\circ$$

$$6) 3 \tan x + \sin 27^\circ = 3$$

$$3 \tan x = 3 - (\sin 27^\circ)$$

$$3 \tan x = 2.5460095$$

$$\tan x = 0.8486698334$$

$$\text{ref} = 40.32026 \dots$$

1st

$$x = 40.32^\circ + k \cdot 180^\circ$$

3rd

$$x = 180^\circ + \text{ref} + k \cdot 180^\circ$$

$$x = 220.32^\circ + k \cdot 180^\circ$$

$$x = -319.68^\circ$$

$$x = -139.68^\circ$$

$$x = 40.32^\circ$$

$$x = 220.32^\circ$$

$$\begin{aligned} 9) \quad & 5 \cos(x + 15^\circ) - 2 = 0 \\ & 5 \cos(x + 15^\circ) = 2 \\ & \cos(x + 15^\circ) = \frac{2}{5} \end{aligned}$$

$$\text{ref} = 66,42182 \dots$$

1st

$$x + 15 = 66,42 + k \cdot 360^\circ$$

$$x = 51,42 + k \cdot 360^\circ$$

4th

$$x + 15^\circ = 360^\circ - \text{ref} + k \cdot 360^\circ$$

$$x = 278,58 + k \cdot 360^\circ$$

$$x = -308,58$$

$$x = 51,42$$

$$x = -81,42$$

$$x = 278,58$$

• Exc 17  $\rightarrow$  general solutions.

$$3) \cos 3x = -0,123$$

$$\text{ref} = 180 - 82,93472 \dots$$

$$\text{ref} = 97,06527 \dots$$

2nd

$$3x = 180^\circ - \text{ref} + k \cdot 360^\circ$$

$$3x = 82,9347 \dots + k \cdot 360^\circ$$

$$x = 27,64^\circ + k \cdot 120^\circ$$

3rd

$$3x = 180^\circ + \text{ref} + k \cdot 360^\circ$$

$$3x = 277,0652 \dots + k \cdot 360^\circ$$

$$x = 92,36^\circ + k \cdot 120^\circ$$

$$4) \tan(x + 56^\circ) = 7,56$$

$$\text{ref} = 82,46493 \dots$$

1st

$$x + 56^\circ = 82,4649 \dots + k \cdot 180^\circ$$

$$x = 26,46^\circ + k \cdot 180^\circ$$

3rd

$$x + 56^\circ = 180^\circ + \text{ref} + k \cdot 180^\circ$$

$$x = 206,46^\circ + k \cdot 180^\circ$$

---

$$5) \tan \frac{x}{2} = -1,421$$

$$\text{ref} = 180 - 54,86480 \dots$$

$$\text{ref} = 125,13519 \dots$$

2nd

$$\frac{x}{2} = 180^\circ - \text{ref} + k \cdot 180^\circ$$

$$\frac{x}{2} = 54,86480 \dots + k \cdot 180^\circ$$

$$x = 109,73^\circ + k \cdot 360^\circ$$

4th

$$\frac{x}{2} = 360 - \text{ref} + k \cdot 180^\circ$$

$$\frac{x}{2} = 234,86481 \dots + k \cdot 180$$

$$x = 469,73^\circ + k \cdot 360^\circ$$

$$8) \quad 2 \tan(2x - 10^\circ) = 10,67^\circ$$
$$\tan(2x - 10^\circ) = 5,335$$

$$\text{ref} = 79,38358 \dots$$

1st

$$2x - 10^\circ = 79,38358 \dots + k \cdot 180^\circ$$

$$2x = 89,38358 \dots + k \cdot 180^\circ$$

$$x = 44,69^\circ + k \cdot 90^\circ$$

3rd

$$2x - 10^\circ = 180^\circ + \text{ref} + k \cdot 180^\circ$$

$$2x = 269,3835 \dots + k \cdot 180^\circ$$

$$x = 134,69^\circ + k \cdot 90^\circ$$