

TRIGONOMETRIJA, naloge za 3. letnik

Naloge¹ so namenjene utrjevanju učne snovi in pripravi na preverjanje in ocenjevanje znanja.

Šolsko leto: 2007/2008

ENOTSKA KROŽNICA

1. Določi predznake števil. Pomagaj si z enotsko krožnico.

- | | |
|----------------------------|----------|
| (a) $\sin 181^0$ | [R:neg.] |
| (b) $\cos 181^0$ | [R:neg.] |
| (c) $\sin 237^0$ | [R:neg.] |
| (d) $\cos 273^0$ | [R:poz.] |
| (e) $\sin \frac{7\pi}{11}$ | [R:poz.] |
| (f) $\cos \frac{7\pi}{11}$ | [R:neg.] |
| (g) $\sin \frac{5\pi}{3}$ | [R:neg.] |
| (h) $\cos \frac{5\pi}{3}$ | [R:poz.] |

2. Določi predznak izraza:

- | | |
|--|----------|
| (a) $\sin 145^0 \cdot \cos 145^0$ | [R:neg.] |
| (b) $\sin \frac{\pi}{3} \cdot \cos \frac{2\pi}{3}$ | [R:neg.] |

★ V učbeniku reši naloge: 248

3. Katero od števil je večje?

- | | |
|------------------------------|---------------------------|
| (a) $\sin 172^0, \sin 174^0$ | [R:sin 172 ⁰] |
| (b) $\cos 255^0, \cos 256^0$ | [R:cos 256 ⁰] |

4. Katero od obeh števil je manjše?

- | | |
|--|------------------------------|
| (a) $\sin \frac{\pi}{7}, \sin \frac{\pi}{8}$ | [R:sin $\frac{\pi}{8}$] |
| (b) $\cos \frac{\pi}{7}, \cos \frac{\pi}{8}$ | [R:cos $\frac{\pi}{7}$] |
| (c) $\cos(-\frac{\pi}{10}), \cos(-\frac{\pi}{11})$, | [R:sin($-\frac{\pi}{11}$)] |

★ V učbeniku reši naloge: 225, 227, 228, 229, 230, 231, 233, 232, 234, 241, 242, 243, 244.

5. Naj bosta kota α in β ostra. Kateri od kotov je večji, če je:

- | | |
|---|----------------|
| (a) $\sin \alpha = 0,5, \sin \beta = 0,6$ | [R: β] |
| (b) $\cos \alpha = 0,4, \cos \beta = 0,3$ | [R: β] |
| (c) $\sin \alpha = 0,5, \cos \beta = 0,5$ | [R: α] |

¹Pripravila Vera Orešnik, prof.

6. Določi vse kote med 0 in 2π , za katere je

(a) $\cos \alpha = \frac{\sqrt{2}}{2}$

[R: $\frac{\pi}{4}$ in $-\frac{\pi}{4}$ oz. $\frac{7\pi}{4}$]

(b) $\sin \alpha = -\frac{\sqrt{3}}{2}$

[R: $\frac{4\pi}{3}$ in $\frac{5\pi}{3}$]

(c) $\operatorname{tg} \alpha = \frac{\sqrt{3}}{3}$

[R: $\frac{\pi}{6}$]

(d) $\operatorname{ctg} \alpha = -1$

[R: $-\frac{\pi}{4}$ oz. $\frac{3\pi}{4}$]

FUNKCIJE KOMPLEMENTARNIH KOTOV

7. Izrazi kotno funkcijo danega kota s funkcijo komplementarnega kota:

(a) $\sin 35^\circ$

[R: $\cos 55^\circ$]

(b) $\cos 72^\circ 40'$

[R: $\sin 17^\circ 20'$]

(c) $\operatorname{tg}(82^\circ - x)$

[R: $\operatorname{ctg}(8^\circ + x)$]

(d) $\operatorname{ctg}(13^\circ 56' 13'')$

[R: $\operatorname{tg} 76^\circ 3' 47''$]

★ V učbeniku reši naloge: 300.

PREHODI NA FUNKCIJE OSTRIH KOTOV

★ V učbeniku reši naloge: 244,245

8. Zapiši s funkcijo ostrega kota in izračunaj vrednost brez uporabe kalkulatorja:

(a) $\cos 120^\circ, \cos 300^\circ, \sin 210^\circ, \sin 315^\circ$

[R: $-\frac{1}{2}, \frac{1}{2}, -\frac{1}{2}, -\frac{\sqrt{2}}{2}$]

(b) $\operatorname{tg} 135^\circ, \operatorname{tg} 240^\circ, \operatorname{ctg} 150^\circ, \operatorname{ctg} 330^\circ$

[R: $-1, \sqrt{3}, -\sqrt{3}, -\sqrt{3}$]

★ V učbeniku reši naloge: 246,247

9. Izračunaj brez uporabe kalkulatorja:

(a) $\left(\operatorname{tg}^3 210^\circ \cdot \sin 150^\circ\right)^{-2} =$

[R: 108]

(b) $\left(\frac{2 \cos 315^\circ + \sin 225^\circ}{\operatorname{tg}^2 210^\circ}\right)^{-1} =$

[R: $\frac{\sqrt{2}}{3}$]

(c) $\operatorname{tg}^{-1} 315^\circ \cdot \cos 45^\circ - \sin^4 150^\circ =$

[R: $\frac{-8\sqrt{2}-1}{16}$]

(d) $\left(\frac{\cos 120^\circ + \sin 210^\circ}{\operatorname{tg} 225^\circ \cdot \operatorname{ctg} 135^\circ}\right)^{-1} =$

[R: 1]

(e) $\frac{2 - \cos 300^\circ - \sin^{-1} 150^\circ}{1 + \sin 210^\circ + \operatorname{tg} 135^\circ} =$

[R: 1]

★ V učbeniku reši naloge: 249, 250 in 277

LASTNOSTI KOTNIH FUNKCIJ

Uporabi lastnosti kotnih funkcij in prehode na funkcije ostrih kotov.

1. Izračunaj:

- | | |
|---|--|
| (a) $\sin(-\frac{\pi}{4}), \cos(-\frac{\pi}{4}), \operatorname{tg}(-\frac{\pi}{4}), \operatorname{ctg}(-\frac{\pi}{4})$ | [R: $-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}, -1, -1$] |
| (b) $\sin(-\frac{13\pi}{4}), \cos(-\frac{13\pi}{4}), \operatorname{tg}(-\frac{13\pi}{4}), \operatorname{ctg}(-\frac{13\pi}{4})$ | [R: $\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}, -1, 1$] |
| (c) $\sin(-\frac{33\pi}{4}), \cos(-\frac{33\pi}{4}), \operatorname{tg}(-\frac{33\pi}{4}), \operatorname{ctg}(-\frac{33\pi}{4})$ | [R: $-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}, -1, -1$] |
| (d) $\sin(-\frac{63\pi}{4}), \cos(-\frac{63\pi}{4}), \operatorname{tg}(-\frac{63\pi}{4}), \operatorname{ctg}(-\frac{63\pi}{4})$ | [R: $\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}, 1, 1$] |
| (e) $\sin(-\frac{5\pi}{3}), \cos(-\frac{5\pi}{3}), \operatorname{tg}(-\frac{5\pi}{3}), \operatorname{ctg}(-\frac{5\pi}{3})$ | [R: $\frac{\sqrt{3}}{2}, \frac{1}{2}, \sqrt{3}, \frac{\sqrt{3}}{3}$] |
| (f) $\sin(-\frac{7\pi}{6}), \cos(-\frac{7\pi}{6}), \operatorname{tg}(-\frac{7\pi}{6}), \operatorname{ctg}(-\frac{7\pi}{6})$ | [R: $\frac{1}{2}, -\frac{\sqrt{3}}{2}, -\frac{\sqrt{3}}{3}, -\sqrt{3}$] |
| (g) $\sin(-\frac{11\pi}{6}), \cos(-\frac{11\pi}{6}), \operatorname{tg}(-\frac{11\pi}{6}), \operatorname{ctg}(-\frac{11\pi}{6})$ | [R: $\frac{1}{2}, \frac{\sqrt{3}}{2}, \frac{\sqrt{3}}{3}, \sqrt{3}$] |
| (h) $\sin(-1845^0), \cos(-1845^0), \operatorname{tg}(-1845^0), \operatorname{ctg}(-1845^0)$ | [R: $-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}, 1, 1$] |
| (i) $\sin(-3900^0), \cos(-3900^0), \operatorname{tg}(-3900^0), \operatorname{ctg}(-3900^0)$ | [R: $\frac{\sqrt{3}}{2}, \frac{1}{2}, \sqrt{3}, \frac{\sqrt{3}}{3}$] |
| (j) $\sin(-1290^0), \cos(-1290^0), \operatorname{tg}(-1290^0), \operatorname{ctg}(-1290^0)$ | [R: $\frac{1}{2}, -\frac{\sqrt{3}}{2}, -\frac{\sqrt{3}}{3}, \sqrt{3}$] |

★ V učbeniku reši naloge: 245, 246, 247.

2. Izračunaj:

- | | |
|---|-------------------|
| (a) $\sin 80^0 - \sin(-1000^0) =$ | [R: 0] |
| (b) $\cos(-2110^0) - \cos 50^0 =$ | [R: 0] |
| (c) $4 \sin(-\frac{\pi}{6}) + 2 \cos(\frac{11\pi}{6}) + 2 =$ | [R: $\sqrt{3}$] |
| (d) $\sin^2(\frac{\pi}{6}) - 4 \cos^2(\frac{11\pi}{6}) =$ | [R: $-2, 75$] |
| (e) $4 \sin(\frac{5\pi}{3}) \cos(\frac{7\pi}{3}) =$ | [R: $-\sqrt{3}$] |
| (f) $2 \sin^2(\frac{\pi}{7}) + 2 \cos^2(\frac{13\pi}{7}) =$ | [R: 2] |
| (g) $3 \sin^2(\frac{11\pi}{5}) + 3 \cos^2(\frac{21\pi}{5}) =$ | [R: 3] |
| (h) $\cos(\frac{5\pi}{3}) \cos(\frac{11\pi}{6}) - \sin(\frac{5\pi}{3}) \sin(\frac{11\pi}{6}) =$ | [R: 0] |

3. Izračunaj:

- | | |
|--|----------------------------|
| (a) $\operatorname{tg}(\frac{\pi}{3}) \operatorname{ctg}(\frac{\pi}{4})$ | [R: $\sqrt{3}$] |
| (b) $\operatorname{tg}(-\frac{\pi}{4}) \operatorname{ctg}(\frac{\pi}{6})$ | [R: $-\sqrt{3}$] |
| (c) $\operatorname{tg}(\frac{3\pi}{4}) \operatorname{ctg}(\frac{2\pi}{3})$ | [R: $\frac{1}{\sqrt{3}}$] |
| (d) $\operatorname{ctg}(\frac{17\pi}{7}) \operatorname{tg}(-7\pi)$ | [R: 0] |
| (e) $\operatorname{tg}(-\frac{\pi}{11}) \operatorname{ctg}(\frac{\pi}{2})$ | [R: 0] |
| (f) $\operatorname{tg}(-\frac{\pi}{6}) \operatorname{ctg}(-\frac{\pi}{3})$ | [R: $\frac{1}{3}$] |
| (g) $\operatorname{tg}(\frac{13\pi}{7}) \operatorname{ctg}(-\frac{3\pi}{2})$ | [R: 0] |
| (h) $\operatorname{ctg}(\frac{5\pi}{6}) \operatorname{tg}(-\frac{\pi}{3})$ | [R: 3] |

★ V učbeniku reši naloge: 249, 250, 277.

4. Naj bo $\cos \alpha = -\frac{1}{3}$. Izračunaj:

(a) $\cos(-\alpha) =$ [R: $-\frac{1}{3}$]

(b) $\sin(\frac{\pi}{2} - \alpha) =$ [R: $-\frac{1}{3}$]

(c) $\sin(\frac{\pi}{2} + \alpha) =$ [R: $-\frac{1}{3}$]

(d) $\cos(2\pi - \alpha) =$ [R: $-\frac{1}{3}$]

(e) $\cos(\pi - \alpha) =$ [R: $\frac{1}{3}$]

(f) $\cos(\pi + \alpha) =$ [R: $\frac{1}{3}$]

5. Naj bo $\sin \alpha = 0,4$. Izračunaj:

(a) $-\sin(-\alpha) =$ [R: 0,4]

(b) $\cos(\frac{\pi}{2} - \alpha) =$ [R: 0,4]

(c) $\sin(2\pi - \alpha) =$ [R: -0,4]

(d) $\sin(\pi - \alpha) =$ [R: 0,4]

(e) $\sin(\pi + \alpha) =$ [R: -0,4]

(f) $\cos(\frac{3\pi}{2} + \alpha) =$ [R: 0,4]

6. Poenostavi:

(a) $\sin \alpha + \sin(\pi + \alpha) + \sin(\pi - \alpha) + \sin(2\pi - \alpha) =$ [R:0]

(b) $\cos \alpha + \cos(\pi + \alpha) + \cos(\frac{\pi}{2} + \alpha) + \cos(\frac{3\pi}{2} + \alpha) =$ [R:0]

(c) $\sin(\alpha - \pi) + \sin(\alpha + \frac{5\pi}{2}) + \cos(\alpha + \frac{\pi}{2}) + \sin(\alpha + \frac{\pi}{2}) =$ [R: $2 \cos \alpha - 2 \sin \alpha$]

(d) $\cos(\alpha - \frac{\pi}{2}) + \sin(\frac{19\pi}{2} - \alpha) + \cos(\alpha - \pi) + \sin(3\pi + \alpha) =$ [R: $-2 \cos \alpha$]

7. Poenostavi:

(a) $\sin^2(2\pi + \alpha) + \cos^2(\alpha - 2\pi) =$ [R: 1]

(b) $\sin(2\pi - \alpha) \cos(4\pi + \alpha) + \sin(6\pi + \alpha) \cos(-2\pi - \alpha) =$ [R: 0]

(c) $\sin^2(\alpha - \frac{\pi}{4}) + \cos^2(\alpha + \frac{7\pi}{4}) =$ [R: 1]

(d) $\sin^2(6\pi - \alpha) + \sin^2(10\pi + \alpha) + 2 \cos^2(2\pi - \alpha) =$ [R: 2]

(e) $\sin^2(\frac{\pi}{3} - 8\pi) + \cos^2(6\pi - \frac{\pi}{3}) + 4 \cos(-\frac{\pi}{4}) \sin(\frac{9\pi}{4}) =$ [R: 3]

(f) $\cos(\frac{11\pi}{6}) \cos(\frac{13\pi}{6}) + \sin(\frac{11\pi}{6}) \sin(\frac{23\pi}{6}) =$ [R: 1]

(g) $\sin^3(\frac{9\pi}{4}) + \cos^3(-\frac{7\pi}{4}) - \cos(-\frac{\pi}{4}) =$ [R: 0]

(h) $2 \sin(-\frac{\pi}{4}) \cos(-\frac{\pi}{4}) + \cos^2(2\pi - \frac{\pi}{7}) + \sin^2(\frac{\pi}{7} - 4\pi) =$ [R: 0]

8. Dokaži, da je funkcija liha ali soda.

(a) $f(x) = 2 \sin x$ [R: Liha]

(b) $f(x) = \cos(4x)$ [R: Soda]

(c) $f(x) = \sin^3 x - 3 \sin x$ [R: Liha]

(d) $f(x) = \sin^2 x$ [R: Soda]

(e) $f(x) = \sin(5x) - \sin(7x)$ [R: Liha]

- (f) $f(x) = x + \sin x$ [R: Liha]
 (g) $f(x) = x^2 \cos(2x)$ [R: Soda]
 (h) $f(x) = \cos x + x$ [R: Ne soda, ne liha]
 (i) $f(x) = \sin(-x)$ [R: Liha]
 (j) $f(x) = \cos(x^3)$ [R: Soda]
 (k) $f(x) = |\sin x|$ [R: Soda]
 (l) $f(x) = \sin |x|$ [R: Soda]
 (m) $f(x) = \operatorname{tg}^3 x$ [R: Liha]
 (n) $f(x) = x \operatorname{tg} x$ [R: Soda]
 (o) $f(x) = \sin x + \operatorname{tg} x$ [R: Liha]
 (p) $f(x) = 1 + \operatorname{tg} x$ [R: Ne soda, ne liha]
 (q) $f(x) = 3 \operatorname{tg} x - 2 \operatorname{ctg} x$ [R: Liha]

★ V učbeniku reši nalogo 253.

OSNOVNE ZVEZE MED KOTNIMI FUNKCIJAMI

9. Izračunaj vrednosti ostalih treh kotnih funkcij ostrega kota, če poznaš eno:

- (a) $\sin \alpha = \frac{3}{5}$ [R: $\cos \alpha = \frac{4}{5}$, $\operatorname{tg} \alpha = \frac{3}{4}$, $\operatorname{ctg} \alpha = \frac{4}{3}$]
 (b) $\sin \alpha = \frac{\sqrt{5}}{3}$ [R: $\cos \alpha = \frac{2}{3}$, $\operatorname{tg} \alpha = \frac{\sqrt{5}}{2}$, $\operatorname{ctg} \alpha = \frac{2\sqrt{5}}{5}$]
 (c) $\cos \alpha = \frac{5}{13}$ [R: $\sin \alpha = \frac{12}{13}$, $\operatorname{tg} \alpha = \frac{12}{5}$, $\operatorname{ctg} \alpha = \frac{5}{12}$]
 (d) $\cos \alpha = 0,2$ [R: $\sin \alpha = \frac{2\sqrt{6}}{5}$, $\operatorname{tg} \alpha = 2\sqrt{6}$, $\operatorname{ctg} \alpha = \frac{\sqrt{6}}{12}$]

★ V učbeniku reši naloge 235, 236, 237, 238, 239, 240, 278, 280.

PREPROSTE TRIGONOMETRIČNE ENAČBE

10. Reši enačbe:

- (a) $\sin x = \frac{1}{2}$ [R: $x = \frac{\pi}{6} + 2k\pi$, $x = \frac{5\pi}{6} + 2k\pi$, $k \in \mathbf{Z}$]
 (b) $\sin x = -1$ [R: $x = -\frac{\pi}{2} + 2k\pi$, $k \in \mathbf{Z}$]
 (c) $\cos x = -1$ [R: $x = (2k + 1)\pi$, $k \in \mathbf{Z}$]
 (d) $\cos x = -\frac{1}{2}$ [R: $\pm x = \frac{2\pi}{3} + 2k\pi$, $k \in \mathbf{Z}$]
 (e) $\operatorname{tg} x = -\sqrt{3}$ [R: $x = -\frac{\pi}{3} + k\pi$, $k \in \mathbf{Z}$]
 (f) $\operatorname{ctg} x = 0$ [R: $x = \frac{\pi}{2} + k\pi$, $k \in \mathbf{Z}$]
 (g) $\sin x = -\frac{\sqrt{3}}{2}$ [R: $x = -\frac{\pi}{3} + 2k\pi$, $k \in \mathbf{Z}$]
 (h) $\cos x = 1$ [R: $x = 2k\pi$, $k \in \mathbf{Z}$]

11. Reši enačbe:

(a) $\sin 2x = -\frac{\sqrt{3}}{2}$

[R: $x = -\frac{\pi}{6} + k\pi, x = \frac{2\pi}{3} + k\pi, k \in \mathbf{Z}$]

(b) $\cos \frac{x}{2} = 1$

[R: $x = 4k\pi, k \in \mathbf{Z}$]

(c) $\operatorname{tg}(x + \frac{\pi}{3}) = 1$

[R: $x = -\frac{\pi}{12} + k\pi, k \in \mathbf{Z}$]

★ V učbeniku reši nalogi 255, 256, 281.

GRAFI KOTNIH FUNKCIJ

12. Izračunaj ničle in nariši grafe funkcij v isti koordinatni sistem na intervalu $[-2\pi, 2\pi]$.

(a) $y = \sin x, y = -\sin x, y = |\sin x|$

(b) $y = \cos x, y = \cos 2x, y = -\cos 2x, y = |\cos 2x|$

(c) $y = \sin 3x, y = -\sin 3x, y = |\sin 3x|$

(d) $y = \sqrt{2} \cos \frac{x}{2}, y = -\sqrt{2} \cos \frac{x}{2}, y = |\sqrt{2} \cos \frac{x}{2}|$

(e) $y = 0,5 \sin \frac{x}{3}, y = -0,5 \sin \frac{x}{3}, y = |0,5 \sin \frac{x}{3}|$

(f) $y = -2 \sin 4x$

(g) $y = \cos 6x$

★ V učbeniku reši naloge: 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276 in 311a.

★ V učbeniku reši naloge: 254, 257, 258, 259, 260, 261, 262, 263, 264, 265.

★ V učbeniku reši naloge: 282, 283, 284a, 285, 286, 287.

13. Presečišča grafov funkcij s premico.

★ V učbeniku reši naloge 263, 264, 265 in 282, 283, 284, 285, 286, 287.

ADICIJSKI IZREKI

★ V učbeniku reši naloge: 288, 289, 290, 293, 294, 295, 296, 297, 298, 299, 301, 302, 291, 292.

★ V učbeniku reši naloge (Funkcije dvojnih kotov): 303, 304, 305.

TRIGONOMETRIČNI IZRAZI

14. Izrazi v najpreprostejši obliki:

- (a) $\frac{\cos x - \cos^3 x}{\sin 2x} =; x \neq k \cdot \frac{\pi}{2}$ [R: $\frac{\sin x}{2}$]
- (b) $\frac{\sin x - \sin^3 x}{\sin 2x} =; x \neq k \cdot \frac{\pi}{2}$ [R: $\frac{\cos x}{2}$]
- (c) $(\cos x + \sin x)^2 - \sin 2x$ [R: 1]
- (d) $\frac{\sin 2x}{1 - \cos 2x}; x \neq k \cdot \frac{\pi}{2}$ [R: $\operatorname{ctg} x$]
- (e) $\frac{\sin 2x}{\cos 2x + \sin^2 x}; x \neq \frac{\pi}{2} + k \cdot \pi$ [R: $2 \operatorname{tg} x$]
- (f) $\frac{\sin x \cdot \sin 2x}{(\cos x - \cos x \cdot \cos 2x)}; x \neq k \cdot \frac{\pi}{2}$ [R: 1]
- (g) $\frac{\cos x \cdot \sin 2x}{\sin x + \sin x \cdot \cos 2x}; x \neq k \cdot \pi; \frac{\pi}{2} + k\pi$ [R: 1]
- (h) $\frac{2 \sin^2 x + \sin 2x}{2 \cos^2 x + \sin 2x}; x \neq \frac{\pi}{2}; \frac{3\pi}{4} + k\pi$ [R: $\operatorname{tg} x$]
- (i) $1 - \cos 2x - \sin(-2x) - 2 \sin^2 x$ [R: $\sin 2x$]

★ V učbeniku reši naloge 251, 279, 307, 308, 309, 310.

15. Izrazi v najpreprostejši obliki:

- (a) $(1 + \operatorname{tg}^2 x) \cdot \cos x - \operatorname{ctg} x \cdot \sin x$ [R: $\sin x \cdot \operatorname{tg} x, x \neq \frac{\pi}{2}(2k + 1)$]
- (b) $(1 + \operatorname{ctg}^2 x) \cdot \sin x - \operatorname{tg} x \cdot \cos x$ [R: $\cos x \cdot \operatorname{ctg} x, x \neq k\pi$]
- (c) $\frac{\operatorname{tg} x}{1 + \operatorname{ctg}^2 x} - \frac{1}{2} \sin 2x + \operatorname{tg} x$ [R: $2 \operatorname{tg} x \cdot \sin^2 x, x \neq \frac{\pi}{2}(2k + 1)$]
- (d) $\frac{\operatorname{ctg} x}{1 + \operatorname{tg}^2 x} - \frac{1}{2} \sin 2x + \operatorname{ctg} x$ [R: $2 \operatorname{ctg} x \cdot \cos^2 x, x \neq k\pi$]
- (e) $\frac{\operatorname{tg} x}{\sin^2 x} - \frac{\operatorname{ctg} x}{\sin^{-2} x - 1}$ [R: $\operatorname{ctg} x, x \neq 0, x \neq k\pi$]
- (f) $\frac{\operatorname{ctg} x}{\cos^2 x} - \frac{\operatorname{tg} x}{\cos^{-2} x - 1}$ [R: $\operatorname{tg} x, x \neq \frac{\pi}{2}(2k + 1)$]
- (g) $((1 + \operatorname{tg}^2 x) \cdot \sin x)^{-1} + \cos x \cdot \operatorname{ctg}^{-1} x$ [R: $\sin^{-1} x, x \neq k\pi$]
- (h) $((1 + \operatorname{ctg}^2 x) \cdot \cos x)^{-1} + \sin x \cdot \operatorname{tg}^{-1} x$ [R: $\cos^{-1} x, x \neq \frac{\pi}{2}(2k + 1)$]
- (i) $(\sin^{-1} x - \sin x) \cdot \operatorname{ctg}^{-1} x + (1 + \operatorname{tg}^2 x) \cdot \cos x \cdot (1 + \operatorname{ctg}^2 x)^{-1}$ [R: $\cos^{-1} x, x \neq \frac{\pi}{2}(2k + 1)$]
- (j) $(\cos^{-1} x - \cos x) \cdot \operatorname{tg}^{-1} x + (1 + \operatorname{ctg}^2 x) \cdot \sin x \cdot (1 + \operatorname{tg}^2 x)^{-1}$ [R: $\sin^{-1} x, x \neq k\pi$]
- (k) $(1 + \operatorname{ctg} x) \cdot (1 + \operatorname{tg} x)^{-1}$ [R: $\operatorname{ctg} x, x \neq k\pi$]

NAKLONSKI KOT PREMICE

16. Izračunaj naklonski kot premice:

- | | |
|-------------------------------------|----------------------------------|
| (a) $y = 6x - 4$ | [R: $\varphi = 80,54^{\circ}$] |
| (b) $y = \frac{1}{5}x - 7$ | [R: $\varphi = 11,31^{\circ}$] |
| (c) $y = -x - 2$ | [R: $\varphi = 135^{\circ}$] |
| (d) $x = \sqrt{3}$ | [R: $\varphi = 90^{\circ}$] |
| (e) $\frac{x}{3} + \frac{y}{2} = 1$ | [R: $\varphi = 146,31^{\circ}$] |
| (f) $3x + 6y - 2 = 0$ | [R: $\varphi = 153,43^{\circ}$] |
| (g) $\frac{x}{6} + y = 1$ | [R: $\varphi = 170,54^{\circ}$] |
| (h) $y = -\sqrt{5}$ | [R: $\varphi = 0^{\circ}$] |

★ V učbeniku reši naloge 315, 317.

KOT MED DVEMA PREMICA

17. Izračunaj kot med premicama do minute natančno:

- | | |
|--|---------------------------------|
| (a) $y = 2x - 5$ in $y = \frac{1}{3}x - 2$ | [R: $\varphi = 45^{\circ}$] |
| (b) $y = 2x - 5$ in $y = -\frac{1}{2}x + 3$ | [R: $\varphi = 90^{\circ}$] |
| (c) $-3x + 4y + 4 = 0$ in $9x - 12y + 5 = 0$ | [R: $\varphi = 0^{\circ}$] |
| (d) $x - 5y - 5 = 0$ in $5x + 4y - 4 = 0$ | [R: $\varphi = 62^{\circ}39'$] |
| (e) $5x - 3y + 3 = 0$ in $3x + 5y - 5 = 0$ | [R: $\varphi = 90^{\circ}$] |
| (f) $2x - 5y - 3 = 0$ in $3x - 7y + 7 = 0$ | [R: $\varphi = 1^{\circ}24'$] |

★ V učbeniku reši naloge: 316.

★ V učbeniku reši naloge (**ponovitev linearne funkcije**): 318, 319, 320, 321, 322.