Zadatak 10. Točkom $A(-4,1)$ položi pravac koji s pravcima $x-y+1=0$ i $7x+y-33=0$ zatvara jednake kutove.

Rješenje.

$$p \;\ldots\; x-y+1=0 \implies y=x+1$$
$$q \;\ldots\; 7x+y-33=0 \implies y=-7x+33$$
$$r \;\ldots\; y=kx+l, \quad A(-4,1)\in r, \quad \sphericalangle(p,r)=\sphericalangle(q,r)$$
$$\operatorname{tg}\sphericalangle(p,r)=\operatorname{tg}\sphericalangle(q,r)$$
$$\left|\frac{k-1}{1+k\cdot 1}\right|=\left|\frac{k+7}{1-7k}\right|$$
$$\frac{|k-1|}{|1+k|}=\frac{|k+7|}{|1-7k|} \quad / \cdot |1+k|\cdot|1-7k|$$
$$|k-1|\cdot|1-7k|=|k+7||1+k|$$
$$k-1<0 \implies k<1$$
$$1-7k<0 \implies k>\frac{1}{7}1$$
$$k+7<0 \implies k<-7$$
$$1+k<0 \implies k<-1$$

	$\langle -\infty,-7\rangle$	$\langle -7,-1\rangle$	$\langle -1,\frac{1}{7}\rangle$	$\langle \frac{1}{7},1\rangle$	$\langle 1,\infty\rangle$
$k-1$	$-$	$-$	$-$	$-$	$+$
$1-7k$	$+$	$+$	$+$	$-$	$-$
$k+7$	$-$	$+$	$+$	$+$	$+$
$1+k$	$-$	$-$	$+$	$+$	$+$

$\langle -\infty,-7\rangle$

$$(-k+1)(1-7k)=(-k-7)(-1-k)$$
$$-k+7k^2+1-7k=k+k^2+7+7k$$
$$6k^2-16k-6=0 \quad / : 2$$
$$3k^2-8k-3=0$$
$$k_{1,2}=\frac{8\pm\sqrt{64+36}}{6}=\frac{8\pm 10}{6}$$
$$k_1=3, \quad k_2=-\frac{1}{3} \text{ (nisu rješenja jer nisu iz zadanog intervala)}$$

$\langle -7,-1\rangle$

$$(-k+1)(1-7k)=(k+7)(-1-k)$$
$$-k+7k^2+1-7k=-k-k^2-7-7k$$
$$8k^2=-8 \quad / : 8$$
$$k^2=-1 \text{ (nema rješenja)}$$

$\langle -1, \frac{1}{7} \rangle$

$$(-k+1)(1-7k) = (k+7)(1+k)$$
$$-k+7k^2+1-7k = k+k^2+7+7k$$
$$6k^2-16k-6=0 \quad /:2$$
$$3k^2-8k-3=0$$
$$k_{3,4} = \frac{8 \pm \sqrt{64+36}}{6} = \frac{8 \pm 10}{6}$$
$k_3 = 3,$ (nije rješenje jer nije iz zadanog intervala)

$$k_4 = -\frac{1}{3}$$

$\langle \frac{1}{7}, 1 \rangle$

$$(-k+1)(-1+7k) = (k+7)(1+k)$$
$$k-7k^2-1+7k = k+k^2+7+7k$$
$$8k^2 = -8 \quad /:8$$
$k^2 = -1$ (nema rješenja)

$\langle 1, \infty \rangle$

$$(k-1)(-1+7k) = (k+7)(1+k)$$
$$-k+7k^2+1-7k = k+k^2+7+7k$$
$$6k^2-16k-6=0 \quad /:2$$
$$3k^2-8k-3=0$$
$$k_{5,6} = \frac{8 \pm \sqrt{64+36}}{6} = \frac{8 \pm 10}{6}$$
$$k_5 = 3$$
$k_6 = -\frac{1}{3},$ (nije rješenje jer nije iz zadanog intervala)

Dva rješenja:

$$k_4 = -\frac{1}{3} \implies y-1 = -\frac{1}{3}(x+4) \quad / \cdot 3$$
$$3y-3 = -x-4$$
$$x+3y+1=0$$

$$k_5 = 3 \implies y-1 = 3(x+4)$$
$$y-1 = 3x+12$$
$$3x-y+13=0$$