Zadatak 6. Odredi nepoznati koeficijent tako da dani pravac bude tangenta dane kružnice:

1) $3x - y + C = 0,\ x^2 + y^2 - 6x - 2y = 0;$

2) $4x + By + 10 = 0,\ (x-3)^2 + (y-1)^2 = 25;$

3) $Ax + y - 4 = 0,\ (x-7)^2 + y^2 = 20.$

Rješenje. **1)** $y = 3x + C,\ -6 = -2p \implies p = 3,\ -2 = -2q \implies q = 1,$ $0 = 9 + 1 - r^2 \implies r^2 = 10$

$$\begin{aligned}
r^2(1+k^2) &= (q-kp-l)^2\\
10(1+9) &= (1-9-C)^2\\
100 &= (-8-C)^2\\
100 &= 64 + 16C + C^2\\
C^2 + 16C - 36 &= 0\\
C_{1,2} &= \frac{-16 \pm \sqrt{256+144}}{2}\\
C_{1,2} &= \frac{-16 \pm 20}{2}\\
C_{1,2} &= -8 \pm 10
\end{aligned}$$

$C = -18$ ili $C = 2;$

2) $y = -\frac{4}{B}x - \frac{10}{B},\ p = 3,\ q = 1,\ r = 5$

$$\begin{aligned}
r^2(1+k^2) &= (q-kp-l)^2\\
25\left(1 + \frac{16}{B^2}\right) &= \left(1 + 3\cdot\frac{4}{B} + \frac{10}{B}\right)^2\\
25\cdot\frac{B^2+16}{B^2} &= \left(\frac{B+12+10}{B}\right)^2\\
25B^2 + 400 &= (B+22)^2\\
24B^2 - 44B - 84 &= 0 / : 4\\
6B^2 - 11B - 21 &= 0\\
B_{1,2} &= \frac{11 \pm \sqrt{121+504}}{12}\\
B_{1,2} &= \frac{11 \pm 25}{12}\\
B_1 = 3,\quad B_2 &= -\frac{7}{6}
\end{aligned}$$

$B = -\frac{7}{6}$ ili $B = 3;$

3) $y=-Ax+4\,,\ p=7\,,\ q=0\,,\ r=2\sqrt{5}$

$$r^2(1+k^2)=(q-kp-l)^2$$
$$20(1+A^2)=(0+7A-4)^2$$
$$20+20A^2=49A^2-56A+16$$
$$29A^2-56A-4=0$$
$$A_{1,2}=\frac{56\pm\sqrt{3136+464}}{58}$$
$$A_{1,2}=\frac{56\pm 60}{58}$$
$$A_1=2,\quad A_2=-\frac{2}{29}$$

$A=-\dfrac{2}{29}$ ili $A=2\,.$