Zadatak 48. Stranice trokuta ABC leže na pravcima $x - y + 1 = 0$, $x - 2y + 6 = 0$ i $3x + y + 11 = 0$. Odredi jednadžbu kružnice opisane ovom trokutu.

Rješenje.

$$\begin{aligned} x - y + 1 &= 0 \\ 3x + y + 11 &= 0 \\ \hline 4x + 12 &= 0 \\ x &= -3 \\ y &= -2 \end{aligned}$$

$A(-3, -2)$

$$\begin{aligned} 3x + y + 11 &= 0 \\ x - 2y + 6 &= 0 \\ \hline 6y - 18 + y + 11 &= 0 \\ 7y &= 7 \\ y &= 1 \\ x &= -4 \end{aligned}$$

$B(-4, 1)$

$$\begin{aligned} x - y + 1 &= 0 \\ x - 2y + 6 &= 0 \\ \hline y - 5 &= 0 \\ y &= 5 \\ x &= 4 \end{aligned}$$

$C(4, 5)$

$$(-3-p)^2+(-2-q)^2=r^2$$
$$(-4-p)^2+(1-q)^2=r^2$$
$$(4-p)^2+(5-q)^2=r^2$$

$$9+6p+p^2+4+4q+q^2=r^2$$
$$16+8p+p^2+1-2q+q^2=r^2$$
$$16-8p+p^2+25-10q+q^2=r^2$$

$$p^2+q^2+6p+4q+13=r^2$$
$$p^2+q^2+8p-2q+17=r^2$$
$$p^2+q^2-8p-10q+41=r^2$$

$$-2p+6q-4=0/\cdot 8$$
$$16p+8q-24=0$$

$$56q=56$$
$$q=1$$
$$p=1$$
$$1+1-8-10+41=r^2$$
$$r^2=25$$

$$(x-1)^2+(y-1)^2=25\,.$$