Домашно №3, Задача 4 по Алгебра 2 на Компютърни Науки

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Решение

$$
\begin{array}{|ll}
x_1+x_2+x_3+x_4+x_5 & =3 \\
x_1x_2+x_1x_3+x_1x_4+x_1x_5+x_2x_3+x_2x_4+x_2x_5+x_3x_4+x_3x_5+x_4x_5 & =-5 \\
x_1x_2x_3+x_1x_2x_4+x_1x_2x_5+x_1x_3x_4+x_1x_3x_5+x_1x_4x_5+x_2x_3x_4+x_2x_3x_5+x_2x_4x_5+x_3x_4x_5 & =-p \\
x_1x_2x_3x_4+x_1x_2x_3x_5+x_1x_2x_4x_5+x_1x_3x_4x_5+x_2x_3x_4x_5 & =q \\
x_1x_2x_3x_4x_5 & =-r \\
x_1+x_2+x_3=2(x_4+x_5) & \\
x_4x_5=6(x_1x_2+x_1x_3+x_2x_3)=3x_1x_2x_3 &
\end{array}
$$

От равенства 1 и 6 $\implies 2(x_4+x_5)+x_4+x_5=3 \iff x_4+x_5=1$

$$
\begin{array}{|ll}
x_4+x_5 & =1 \\
(x_4+x_5)(x_1+x_2+x_3)+x_1x_2+x_1x_3+x_2x_3+x_4x_5 & =-5 \\
(x_4+x_5)(x_1x_2+x_1x_3+x_2x_3)+x_1x_2x_3+x_1x_4x_5+x_2x_4x_5+x_3x_4x_5 & =-p \\
(x_4+x_5)x_1x_2x_3+x_1x_2x_4x_5+x_1x_3x_4x_5+x_2x_3x_4x_5 & =q \\
x_1x_2x_3x_4x_5 & =-r \\
x_1+x_2+x_3=2 & \\
x_4x_5=6(x_1x_2+x_1x_3+x_2x_3)=3x_1x_2x_3 &
\end{array}
$$

От равенства 2 и 6 $\implies x_1x_2+x_1x_3+x_2x_3+x_4x_5=-7$ от равенство 7 $\implies \frac{1}{6}x_4x_5+x_4x_5=-7$

$\iff \frac{7}{6}x_4x_5=-7 \iff x_4x_5=-6$

$$
\begin{array}{|ll}
x_4+x_5 & =1 \\
x_4x_5 & =-6 \\
(x_4x_5)(x_1+x_2+x_3)+x_1x_2+x_1x_3+x_2x_3+x_1x_2x_3 & =-p \\
(x_4x_5)(x_1x_2+x_1x_3+x_2x_3)+x_1x_2x_3 & =q \\
(x_4x_5)x_1x_2x_3 & =-r \\
x_1+x_2+x_3=2 & \\
-6=6(x_1x_2+x_1x_3+x_2x_3)=3x_1x_2x_3 &
\end{array}
$$

От равенства 3 и 2 и 6 $\implies -6.2+(x_1x_2+x_1x_3+x_2x_3)+x_1x_2x_3=-p$ от рав. 7

$\implies -12-1+x_1x_2x_3=-p \iff x_1x_2x_3=13-p$ от рав 7 $\implies -2=13-p \implies p=15$

От равенства 4 и 2 и 7 $\implies -6.(-1)+x_1x_2x_3=q$ от рав 7 $\implies 6+(-2)=q \implies q=4$

От равенства 5 и 2 и 7 $\implies (-6).(-2)=-r \implies r=-12$