Problem:

Solve the irrational equation:

$(x^2-4)\sqrt{3+5x-2x^2}=0.$

Solution:

$$(x^2-4)\sqrt{3+5x-2x^2}=0 \Rightarrow \begin{bmatrix} 3+5x-2x^2=0 \\ \begin{cases} x^2-4=0 \\ 3+5x-2x^2\geq 0 \end{cases} \end{bmatrix} \Rightarrow \begin{bmatrix} x_1=-\frac{1}{2},\ x_2=3 \\ \begin{cases} \begin{bmatrix} x=2 \\ x=-2 \end{bmatrix} \\ 3+5x-2x^2\geq 0 \end{cases} \end{bmatrix} \Rightarrow \begin{bmatrix} x_1=-\frac{1}{2},\ x_2=3 \\ x=2 \end{bmatrix} \Rightarrow$$

$\Rightarrow$ *we have obtained the roots*: $x=-\frac{1}{2},\ x=3,\ x=2.$

Answer: $-\frac{1}{2},\ 2,\ 3.$