Period-2

We say that x_1 and x_2 are a period-2 cycle of a one-dimensional map $f(x)$ if

$x_2 = f(x_1)$ and $x_1 = f(x_2)$, and $x_1 \neq x_2$.

Determine the period-2 cycle for the logistic map by solving the equation $x = f(f(x))$, with $f(x) = rx(1-x)$. You will obtain a fourth-degree polynomial equation. Solve it by factoring out the known roots $x = 0$ and $x = 1 - 1/r$.