The present paper emphasizes Jeffery-Hamel flow: fluid flow between two rigid plane walls, where the angle between them is $2\alpha$. Jeffery-Hamel flow has been studied and its strongly nonlinear ordinary differential equation has been solved through the reproducing kernel Hilbert space method (RKHSM). The validity of the reproducing kernel method is set by comparing our results with the homotopy analysis method (HAM), the differential transform method (DTM), the homotopy perturbation method (HPM), the spectral-homotopy analysis method (SHAM), and numerical results for different values of $h$, $\alpha$, and $Re$. The results show that the proposed reproducing kernel method can achieve good results in predicting the solutions of such problems. Comparison between obtained results showed that RKHSM is more acceptable and accurate than other methods. (Received September 23, 2012)