Reliability in Computing: Rump’s Problem

Evaluate the expression

\[ f(x, y) = 333.75y^6 + x^2(11x^2y^2 - y^6 - 121y^4 - 2) + 5.5y^8 + x/(2y) \]

for \( x = 77617 \) and \( y = 33096 \). Compare your results using single precision, double precision and extended precision. Which result is the correct answer? Please specify the computer model (or calculator) that you used in these calculations.