

Extra 1 (Chapter one)

Q1) Assume $f(h) = 1 + h^2 + O(h^4)$ and $g(h) = h + 2h^2 - h^4 + O(h^5)$

- (a) Find the approximated value of $f(0.1)$ and its error.
 - (b) Find the approximated value of $f(0.1) + g(0.01)$ and its error.
 - (c) Find the approximated value of $f(0.1) \times g(0.01)$ and its error.
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Q2) If $f(x) = \frac{\ln(\sin x)}{e^{-x}}$, estimate $f(\frac{4}{7})$

- (a) Using five-digit chopping.
 - (b) Using five-digit rounding.
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Q3) If we approximated e^x by $1 + x + \frac{x^2}{2} + \frac{x^3}{6}$, find an upper bound for the error of estimating $e^{0.2}$.

Q4) If P is a fraction approximated by 0.715 with relative error of 0.01, find P .

Q5) If the value of $\frac{1}{8} + \frac{3}{8}$ is approximated using 2-digit rounding, find the relative error.
