

REVIEW QUESTIONS

Module 4: Errors

- Let x^* and y^* be approximate values of two quantities x and y , respectively.
 - Explain clearly what is meant by:
 - The absolute error in x^*
 - The relative error in y^*
 - What is the significance of the difference in the definitions of these two types of errors?
- The percentage error in a measurement of the radius of a sphere is known to be 3%. Calculate the relative error in calculating the volume of the sphere.
- Using the method of substitution find the exact solution of the linear system of equations
$$\begin{aligned}5x + 7y &= 12.075 \\7x + 10y &= 16.905\end{aligned}$$
 - Round the values on the right hand side of each equation to two significant figures and then find the exact solution of the resulting system of linear equation.
 - Use the solutions obtained from the two systems of equations to explain why initial errors need to be avoided as much as possible.
- How many significant figures are in each of the following numbers:
 - 00001000020000
 - 10000200003004
 - 000123.0004500
- Round each of the following numbers correct to five significant figures.
 - 0123.395
 - 0123.205
 - 0123.206