

# Summary of Midterm Question 3

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In part (a), IDL calculated the value of the specified function of  $x$  by calling on the function  $fx$  to return the value of  $f(x)$ .

In part (b), IDL calculated an approximate value for the integral of the function, given arbitrary bounds of integration, using a Simpson's rule function.

In part (c), IDL calculated and approximate value for the integral of the function, from  $x=1$  to  $x=10$ , using the same Simpson's rule function.

In part (d), IDL calculated the analytical value for the integral of the function, from  $x=1$  to  $x=10$ , using an analytical integrator function. The Simpson's rule approximation was found to be 0.003 percent smaller than the analytical value for this integration range.

The computed values were: (a) 29.0801 (b) 5.05481 (c) 2526.91 (d) 2527.00

In part (e and f), IDL calculated the accuracy error resulting from splitting the integral into different step sizes. There's a coding issue in using the Simpson's rule function to compute an approximate integral for different step sizes, so the resulting accuracy errors are too large.

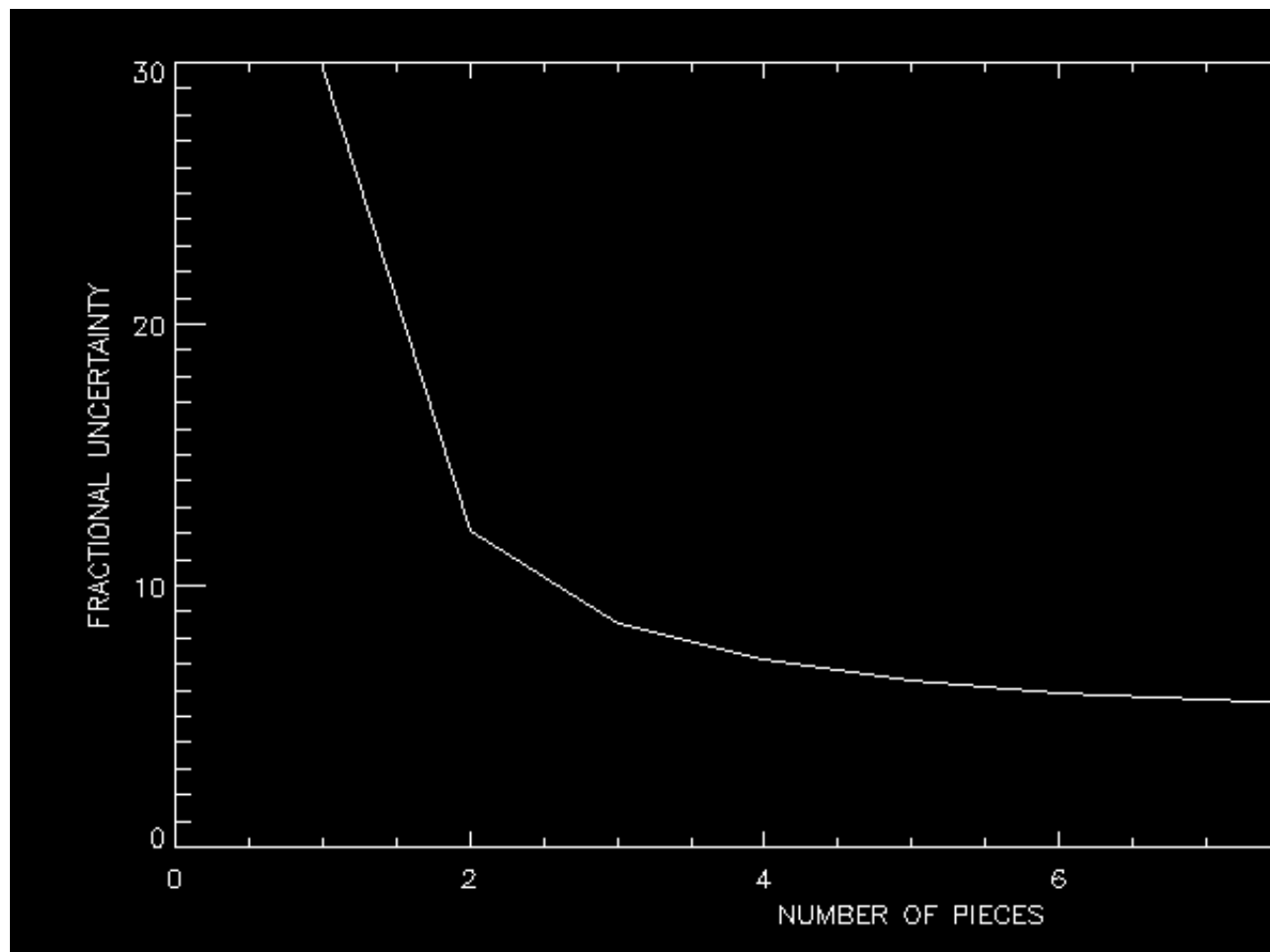


Figure 1: