

Name: _____

Put away any notes or other materials, and work on this activity alone.

You'll receive feedback on your work and will complete a similar question on a future skill check.

1. A quadrature rule can be written in the form $\sum_{k=1}^n a_k f(x_k)$. For the composite midpoint rule on two panels, given by $(b-a)\frac{1}{4} \left(f(a) + 2f\left(\frac{a+b}{2}\right) + f(b) \right)$, identify n and a_k, x_k for $k = 1, \dots, n$.

2. Does the following form a cubic spline interpolating $(0, 1)$, $(1, 10)$, $(2, 49)$?

$$S(x) = \begin{cases} 4x^3 + 3x^2 + 2x + 1 & \text{on } [0, 1] \\ 4(x-1)^3 + 15(x-1)^2 + 20(x-1) + 10 & \text{on } [1, 2] \end{cases}$$