

$$\begin{aligned}
 1. \quad \Delta x &= \frac{2}{5} \\
 x_0 &= 0 \\
 x_1 &= \frac{2}{5} \\
 x_2 &= \frac{4}{5} \\
 x_3 &= \frac{6}{5} \\
 x_4 &= \frac{8}{5} \\
 x_5 &= 2 \text{ (Not used on left sum.)}
 \end{aligned}$$

$$A \approx f(0)\frac{2}{5} + f\left(\frac{2}{5}\right)\frac{2}{5} + \dots + f\left(\frac{8}{5}\right)\frac{2}{5} \approx \frac{252}{25}$$

$$\begin{aligned}
 2. \quad \Delta x &= 1 \\
 x_0 &= -3 \text{ (Not used on right sum.)} \\
 x_1 &= -2 \\
 x_2 &= -1 \\
 x_3 &= 0 \\
 x_4 &= 1 \\
 x_5 &= 2
 \end{aligned}$$

$$A \approx f(-2)(1) + f(-1)(1) + \dots + f(2)(1) \approx 20$$

$$\begin{aligned}
 3. \quad \Delta x &= 1 \\
 x_0 &= 1 \\
 x_1 &= 2 \\
 x_2 &= 3 \\
 x_3 &= 4 \\
 x_4 &= 5 \\
 x_5 &= 6
 \end{aligned}$$

$$\begin{aligned}
 m_1 &= \frac{3}{2} \\
 m_2 &= \frac{5}{2} \\
 m_3 &= \frac{7}{2} \\
 m_4 &= \frac{9}{2} \\
 m_5 &= \frac{11}{2}
 \end{aligned}$$

$$A \approx f\left(\frac{3}{2}\right)(1) + f\left(\frac{5}{2}\right)(1) + \dots + f\left(\frac{11}{2}\right)(1) \approx \frac{405}{4}$$

$$\begin{aligned}
4. \quad \Delta x &= \frac{3}{4} \\
x_0 &= 0 \\
x_1 &= \frac{3}{4} \\
x_2 &= \frac{3}{2} \\
x_3 &= \frac{9}{4} \\
x_4 &= 3 \text{ (Not used on left sum.)}
\end{aligned}$$

$$A \approx f(0)\frac{3}{4} + f\left(\frac{3}{4}\right)\frac{3}{4} + f\left(\frac{3}{2}\right)\frac{3}{4} + f\left(\frac{9}{4}\right)\frac{3}{4} \approx \frac{369}{32}$$

$$\begin{aligned}
5. \quad \Delta x &= \frac{3}{4} \\
x_0 &= 0 \text{ (Not used on right sum.)} \\
x_1 &= \frac{3}{4} \\
x_2 &= \frac{3}{2} \\
x_3 &= \frac{9}{4} \\
x_4 &= 3
\end{aligned}$$

$$A \approx f\left(\frac{3}{4}\right)\frac{3}{4} + f\left(\frac{3}{2}\right)\frac{3}{4} + f\left(\frac{9}{4}\right)\frac{3}{4} + f(3)\frac{3}{4} \approx \frac{513}{32}$$

$$\begin{aligned}
6. \quad \Delta x &= \frac{3}{4} \\
x_0 &= 0 \\
x_1 &= \frac{3}{4} \\
x_2 &= \frac{3}{2} \\
x_3 &= \frac{9}{4} \\
x_4 &= 3
\end{aligned}$$

$$\begin{aligned}
m_1 &= \frac{3}{8} \\
m_2 &= \frac{9}{8} \\
m_3 &= \frac{15}{8} \\
m_4 &= \frac{21}{8}
\end{aligned}$$

$$A \approx \frac{3}{4} \left[f\left(\frac{3}{8}\right) + f\left(\frac{9}{8}\right) + f\left(\frac{15}{8}\right) + f\left(\frac{21}{8}\right) \right] \approx \frac{855}{64}$$

Note: You can factor out the Δx to make the calculation less cumbersome.

$$\begin{aligned}
7. \quad & \Delta x = 1 \\
& x_0 = -1 \\
& x_1 = 0 \\
& x_2 = 1 \\
& x_3 = 2 \\
& x_4 = 3 \\
& x_5 = 4 \text{ (Not used on left sum.)}
\end{aligned}$$

$$A \approx 1[f(-1) + f(0) + f(1) + f(2) + f(3)] \approx 35$$

$$\begin{aligned}
8. \quad & \Delta x = 1 \\
& x_0 = -1 \text{ (Not used on right sum.)} \\
& x_1 = 0 \\
& x_2 = 1 \\
& x_3 = 2 \\
& x_4 = 3 \\
& x_5 = 4
\end{aligned}$$

$$A \approx 1[f(0) + f(1) + f(2) + f(3) + f(4)] \approx 40$$

$$\begin{aligned}
9. \quad & \Delta x = 1 \\
& x_0 = -1 \\
& x_1 = 0 \\
& x_2 = 1 \\
& x_3 = 2 \\
& x_4 = 3 \\
& x_5 = 4
\end{aligned}$$

$$m_1 = -\frac{1}{2}$$

$$m_2 = \frac{1}{2}$$

$$m_3 = \frac{3}{2}$$

$$m_4 = \frac{5}{2}$$

$$m_5 = \frac{7}{2}$$

$$A \approx 1 \left[f\left(\frac{-1}{2}\right) \right] + f\left(\frac{1}{2}\right) + f\left(\frac{3}{2}\right) + f\left(\frac{5}{2}\right) + f\left(\frac{7}{2}\right) \approx 35$$