$$x^{-\frac{1}{2}} = \frac{1}{x^{\frac{1}{2}}} = \frac{1}{\sqrt{x}}$$

$f(x) = x^2 - 3x + 4 \qquad [1, 4]$

$\Delta x = 1$ ↓ 3 left endpoints

$x_0 = 1 \quad x_1 = 2 \quad x_2 = 3$

Estimated Area $= \frac{4-1}{3}\left(f(x_0) + f(x_1) + f(x_2) + \dots + f(x_{n-1})\right)$

$= (1)\left(f(1) + f(2) + f(3)\right)$

$= (1)\left(2 + (2^2 - 3(2) + 4) + (3^2 - 3(3) + 4)\right)$

$= (1)(2 + 2 + 4) = 8$

$f(x) = \sqrt{x} \qquad [0, 8]$ 4 right endpoints

$x_0 = 0$

$\Delta x = \frac{b-a}{n} = \frac{8-0}{4} = 2$ $\quad x_1 = x_0 + \Delta x = 0 + 2 = 2$

Area Estimate $= \Delta x\left(f(x_1) + f(x_2) + \dots + f(x_n)\right)$

$= 2\left(f(2) + f(4) + f(6) + f(8)\right)$

$= 2(\sqrt{2} + \sqrt{4} + \sqrt{6} + \sqrt{8})$

$= 17.4$

$f(x) = \ln(x) + x \qquad [1, 3]$ 4 rect $\quad \Delta x = 0.5$

Est. Area $= \Delta x\left(f\left(\frac{x_0+x_1}{2}\right) + f\left(\frac{x_1+x_2}{2}\right) + \dots f\left(\frac{x_3+x_4}{2}\right)\right)$

$= 0.5\left(f(1.25) + f(1.75) + f(2.25) + f(2.75)\right)$