

**Solution 23.25**

The flow rate is equal to the derivative of volume with respect to time. Equation (23.9) can be used to compute the derivative as

$$x_0 = 1 \quad f(x_0) = 1$$

$$x_1 = 5 \quad f(x_1) = 8$$

$$x_2 = 8 \quad f(x_2) = 16.4$$

$$f'(7) = 1 \frac{2(7) - 5 - 8}{(1-5)(1-8)} + 8 \frac{2(7) - 1 - 8}{(5-1)(5-8)} + 16.4 \frac{2(7) - 1 - 5}{(8-1)(8-5)} = 0.035714 - 3.33333 + 6.247619 = 2.95$$

Therefore, the flow is equal to  $2.95 \text{ cm}^3/\text{s}$ .