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

$$x_0 = 1$$
 $f(x_0) = 1$
 $x_1 = 5$ $f(x_1) = 8$
 $x_2 = 8$ $f(x_2) = 16.4$

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

Therefore, the flow is equal to 2.95 cm³/s.

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