

**Zadatak 8.** Izračunaj površinu lika koji određuje graf funkcije  $f(x) = (x - 1)(x^2 - 4)$  s osi apscisa.

*Rješenje.*

$$\begin{aligned} P_1 &= \int_{-2}^1 (x^3 - x^2 - 4x + 4) dx = \left. \frac{x^4}{4} - \frac{x^3}{3} - 2x^2 + 4x \right|_{-2}^1 \\ &= \frac{1}{4} - \frac{1}{3} - 2 + 4 - \left( 4 + \frac{8}{3} - 8 - 8 \right) = \frac{1}{4} + 2 - \frac{1}{3} + 12 - \frac{8}{3} \\ &= \frac{1}{4} + 14 - 3 = \frac{45}{4} \end{aligned}$$

$$\begin{aligned} P_2 &= - \int_1^2 (x^3 - x^2 - 4x + 4) dx = - \left. \left( \frac{x^4}{4} - \frac{x^3}{3} - 2x^2 + 4x \right) \right|_1^2 \\ &= - \left( 4 - \frac{8}{3} - 8 + 8 - \frac{1}{4} + \frac{1}{3} + 2 - 4 \right) = - \left( 2 - \frac{1}{4} - \frac{7}{3} \right) \\ &= - \frac{24 - 3 - 28}{12} = \frac{7}{12} \end{aligned}$$

$$P = P_1 + P_2 = \frac{45}{4} + \frac{7}{12} = \frac{135 + 7}{12} = \frac{142}{12} = \frac{71}{6}.$$