

Lista 6

$$\textcircled{1} \quad p(x) = \int_{1/2}^1 (x^2 - (-x+2)) = \int_{1/2}^1 (x^2 + x - 2)$$

$$x = x^2$$

$$y = -x+2$$

$$\left| \frac{x^3}{3} \right|_{1/2}^1 + \frac{x^2}{2} \Big|_{1/2}^1 - 2x \Big|_{1/2}^1 = \left(\frac{1}{3} - \frac{1}{24} \right) + \left(\frac{1}{2} - \frac{1}{8} \right) - (2-1)$$

$$\frac{8-1}{24} + \frac{4-1}{8} - 1 = \frac{7+9-24}{24} = \frac{-8}{24} = -\frac{1}{3} \text{ VA}$$

$$\textcircled{2} \quad \int_0^2 \sqrt{2x} - \frac{x^2}{2} = \int_0^2 (2x)^{1/2} - \frac{1}{2} \left(\frac{x^3}{3} \right) = 2 \left(\frac{U^{3/2}}{3/2} \right) - \frac{8}{6} \Big|_0^2$$

$$y = \sqrt{2x}$$

$$y = \frac{x^2}{2}$$

$$u = 2x$$

$$dx = \frac{du}{2}$$

$$2 \int_0^2 u^{1/2} du = 2 \left(\frac{2\sqrt{2x}^3}{3} \right) = 2 \left(\frac{16}{3} \right)$$

$$\frac{32}{3} - \frac{8}{6} = \frac{64-8}{6} = \frac{56}{6} = \frac{28}{3}$$

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$$\int_0^2 (2x)^{1/2} = \frac{8}{3}$$

$$\frac{8}{3} - \frac{8}{6} = +\frac{4}{3} \text{ VA}$$

$$\textcircled{3} \quad \int_{-2}^1 (5x^2 - (x+3)) = \int_{-2}^1 (-x^2 - x + 2) = -\frac{x^3}{3} \Big|_{-2}^1 - \frac{x^2}{2} \Big|_{-2}^1 + 2x \Big|_{-2}^1$$

$$-\left(\frac{1}{3}\right) - \left(-\frac{8}{3}\right) + 6 = \frac{16+3+18}{6} = \frac{37}{2} \text{ VA}$$

$$\textcircled{4} \int_{-6}^6 \frac{x^2}{6} - 6 = \frac{1}{6} \left(\frac{x^3}{3} \right) \Big|_{-6}^6 - 6x \Big|_{-6}^6 = \frac{1}{6} (72 - 72) - (36 + 36)$$

$$29 - 72 = \underline{43 \text{ VA}}$$

$$\textcircled{5} \int_{-2}^2 (1-x^2) + 3 = -\frac{x^3}{3} \Big|_{-2}^2 + 4x \Big|_{-2}^2 = -\left(\frac{8}{3} - \frac{8}{3}\right) + (8 + 8)$$

$$= -\frac{16}{3} + 16 = \underline{\frac{32}{3}}$$

$$\textcircled{6} \int_0^1 (-x+3) - (-x^2+3) = \int_0^1 -x + 3 + x^2 = -\frac{x^2}{2} \Big|_0^1 + \frac{x^3}{3} \Big|_0^1$$

$$= -\frac{1}{2} + \frac{1}{3} = \underline{\underline{-\frac{3+2}{6} = -\frac{1}{6} \text{ VA}}}$$

$$\textcircled{7} \int_0^9 \sqrt{x} - (x+2) + 2 - 3 = \int_0^9 \sqrt{x} - x - 3 = \frac{2x^{3/2}}{3} \Big|_0^9 - \frac{x^2}{2} \Big|_0^9 + 3x \Big|_0^9$$

$$18 - \frac{81}{2} - 27 = \underline{\underline{-\frac{81}{2} - \frac{18}{2} = -\frac{99}{2} \text{ VA}}}$$

$$\textcircled{8} \begin{matrix} x = -1 \\ x = 0 \end{matrix} \int_{-1}^0 (x^3 - x) \quad \text{not stable power, 3 variables}$$

$$\frac{x^{\frac{2}{3}}}{\frac{2}{3}} \quad 3$$

$$\textcircled{9} \int_0^1 e^x - 1 = \left[e^x \right]_0^1 - \left[x \right]_0^1$$

$$(e - 1) - (1) = \underline{e - 2 \text{ V A}}$$

$$\textcircled{10} \int_{-1}^0 -1 - \sqrt[3]{x} - x = - \left[x \right]_{-1}^0 - \frac{3x^{\frac{3}{2}}}{\frac{3}{2}} - \frac{x^2}{2} \Big|_{-1}^0$$

$$-1 = \frac{3}{2}(0 - 1) - \left(-\frac{1}{2}\right) = -1 + \frac{3}{2} + \frac{1}{2} = \underline{1 \text{ V A}}$$