

**Soluție**

**1.a)**  $l_s(1) = l_d(1) = f(1); l_s(1) = 2; l_d(1) = \frac{2+a}{3}$  și  $f(1) = 2 \Rightarrow 2 = \frac{2+a}{3} \Rightarrow a = 4$ .

**b)**  $\lim_{x \rightarrow -\infty} f(x) = 1 \Rightarrow y = 1$  asimptotă orizontală.

**c)**  $m = f'(2) = 1; f'(x) = \frac{-2x^2 - 2ax + 4}{(x^2 + 2)^2}; f'(2) = \frac{-4 - 4a}{36}; \frac{-4 - 4a}{36} = 1 \Rightarrow a = -10$ .

**2.a)**  $f(\sqrt{x}) = e^x \Rightarrow \int_0^1 e^x dx = e^x \Big|_0^1 = e - 1$ .

**b)**  $\int_0^1 x e^{x^2} dx = \frac{1}{2} \int_0^1 2x e^{x^2} dx = \frac{1}{2} \int_0^1 e^t dt = \frac{1}{2} (e - 1)$ .

**c)**  $1 \leq e^{x^2} \leq e$ , oricare ar fi  $x \in [0, 1] \Rightarrow \int_0^1 1 dx \leq \int_0^1 e^{x^2} dx \leq \int_0^1 e dx \Rightarrow 1 \leq \int_0^1 f(x) dx \leq e$ .