1- Find the coordinates of all points of inflection for the function $f(x) = -x^2 - 9x^{\frac{1}{3}} + 5$, $x \in \mathbb{R}$.

2- Determin $\int \sec^4(2x)\, dx$.

3- Find the absolute minimum value of $f(x) = -x^2 + 14 - \frac{16}{x}$ on the interval $[1, 4]$.

4- Find the vertical asymptotes of $f(x) = \dfrac{x^2 - 1}{x^3 - 3x + 2}$.

5- Determine horizontal asymptotes of

$$f(x) = \begin{cases} \dfrac{x+5}{\sqrt{x^2+3}} & \text{if } x < 3 \\ \dfrac{x^2-1}{4x^2-2x+7} & \text{if } x \geq 3 \end{cases}$$

6- Find $\int \dfrac{\tan(\ln x)}{x}\, dx$.

7- Use Newton's method with the initial approximation $x_1 = 1$ to find x_3, the third approximation to the positive root of the equation $x^2 + 2x - 2 = 0$.

8- Compute $\lim_{x \to \frac{\pi}{2}} \cos(5x)\sec(3x)$.