Найти экстремум функции функции на отрезке методом квадратичной апроксимации. Три итерации метода выполнить вручную + написать программу на одном из языков программирования. $\varepsilon = 0.0001$ у всех.

1. $f(x) = x^2 - 3x + x\ln x$, $[a, b] = [1, 2]$, $\varepsilon = 0.05$;
2. $f(x) = \ln(1+x^2) - \sin x$, $[a, b] = \left[0, \frac{\pi}{4}\right]$, $\varepsilon = 0.03$;
3. $f(x) = \frac{1}{4}x^4 + x^2 - 8x + 12$, $[a, b] = [0, 2]$, $\varepsilon = 0.05$;
4. $f(x) = \frac{1}{2}x^2 - \sin x$, $[a, b] = [0, 1]$, $\varepsilon = 0.03$;
5. $f(x) = x^2 - 2x + e^{-x}$, $[a, b] = [1, 1.5]$, $\varepsilon = 0.05$;
6. $f(x) = \operatorname{tg} x - 2\sin x$, $[a, b] = \left[0, \frac{\pi}{4}\right]$, $\varepsilon = 0.03$;
7. $f(x) = \sqrt{1+x^2} - e^{-2x}$, $[a, b] = [0, 1]$, $\varepsilon = 0.1$;
8. $f(x) = \frac{1}{7}x^7 - x^3 + \frac{1}{2}x^2 - x$, $[a, b] = [1, 1.5]$, $\varepsilon = 0.05$;
9. $f(x) = \frac{1}{3}x^3 - 5x + x\ln x$, $[a, b] = [1.5, 2]$, $\varepsilon = 0.02$;
10. $f(x) = 5x^2 - 8x^{\frac{5}{4}} - 20x$, $[a, b] = [3, 3.5]$, $\varepsilon = 0.02$.
11. $f(x) = x^3 - 3\sin x$, $[a, b] = [0, 1]$, $\varepsilon = 0.001$;
12. $f(x) = x^4 + x^2 + x + 1$, $[a, b] = [-1, 0]$, $\varepsilon = 0.003$;
13. $f(x) = \frac{1}{x} + e^x$, $[a, b] = [0.5, 1.5]$, $\varepsilon = 0.001$;
14. $f(x) = x^2 + x + \sin x$, $[a, b] = [-1, 0]$, $\varepsilon = 0.003$;
15. $f(x) = x^2 + e^{-x}$, $[a, b] = [0, 1]$, $\varepsilon = 0.001$;
16. $f(x) = x^2 - 3x + x\ln x$, $[a, b] = [1, 2]$, $\varepsilon = 0.005$;
17. $f(x) = \ln(1+x^2) - \sin x$, $[a, b] = \left[0, \frac{\pi}{4}\right]$, $\varepsilon = 0.001$;
18. $f(x) = \frac{1}{4}x^4 + x^2 - 8x + 12$, $[a, b] = [0, 2]$, $\varepsilon = 0.005$;
19. $f(x) = \frac{1}{2}x^2 - \sin x$, $[a, b] = [0, 1]$, $\varepsilon = 0.003$;
20. $f(x) = x^2 - 2x + e^{-x}$, $[a, b] = [1, 1.5]$, $\varepsilon = 0.001$.
21. $f(x) = 2x + \frac{1}{x}$, $[a, b] = [0, 1]$, $\varepsilon = 0.1$;
22. $f(x) = x^4 + 2x^2 + 4x + 1$, $[a, b] = [-1, 0]$, $\varepsilon = 0.1$;
23. $f(x) = x^5 - 5x^3 + 10x^2 - 5x$, $[a, b] = [-3, -2]$, $\varepsilon = 0.05$;
24. $f(x) = x^2 + 3x(\ln x - 1)$, $[a, b] = [0.5, 1]$, $\varepsilon = 0.05$;
25. $f(x) = x^2 - 2x - 2\cos x$, $[a, b] = [0.5, 1]$, $\varepsilon = 0.05$;
26. $f(x) = (x+1)^4 - 2x^2$, $[a, b] = [-3, -2]$, $\varepsilon = 0.03$;
27. $f(x) = \sqrt{1+x^2} - e^{-2x}$, $[a, b] = [0, 1]$, $\varepsilon = 0.1$;
28. $f(x) = 3(5-x)^{\frac{4}{3}} + 2x^2$, $[a, b] = [1.5, 2]$, $\varepsilon = 0.025$;
29. $f(x) = -x^3 + 3(1+x)(\ln(1+x) - 1)$, $[a, b] = [-0.5, 0.5]$, $\varepsilon = 0.05$;
30. $f(x) = 2 + x^2 + x^{\frac{2}{3}} - \ln\left(1 + x^{\frac{2}{3}}\right) - 2x\operatorname{arctg} x^{\frac{1}{3}}$, $[a, b] = [0.5, 1]$, $\varepsilon = 0.025$.