Exercise 1. Write code to evaluate the following functions at the given values of x

- At $x = 2.9$,
$$f(x) = -(16x^2 - 24x + 5)e^{-x};$$

- At $x = -10$ and at $x = 3.456789012$,
$$f(x) = \begin{cases} (x-2)^2, & x < 3 \\ 2\log(x-2) + 1, & \text{elsewhere} \end{cases};$$

- At $x = 0$,
$$f(x) = -[x - \sin(x)]e^{-x^2},$$

- At $x = 5$,
$$f(x) = -\sum_{k=1}^{6} k \sin[(k+1)x + k].$$

Exercise 2. Write code to evaluate the following mathematical series

- For K=10, at $x = e$
$$\sinh(x) \approx \sum_{k=0}^{K} \frac{x^{2k+1}}{(2k+1)!};$$

- For K = 10, at $x = 0.5$
$$\operatorname{arcsinh}(x) \approx \sum_{k=0}^{K} \frac{(-1)^k (2k)! x^{2k+1}}{2^{2k}(k!)^2(2k+1)};$$

- For $K = 5$, at $x = 1/3$
$$\sqrt{\frac{1 - \sqrt{1-x}}{x}} \approx \sum_{k=0}^{K} \frac{(4k)!}{2^{4k}\sqrt{(2)}(2k!)(2k+1)!} x^k.$$