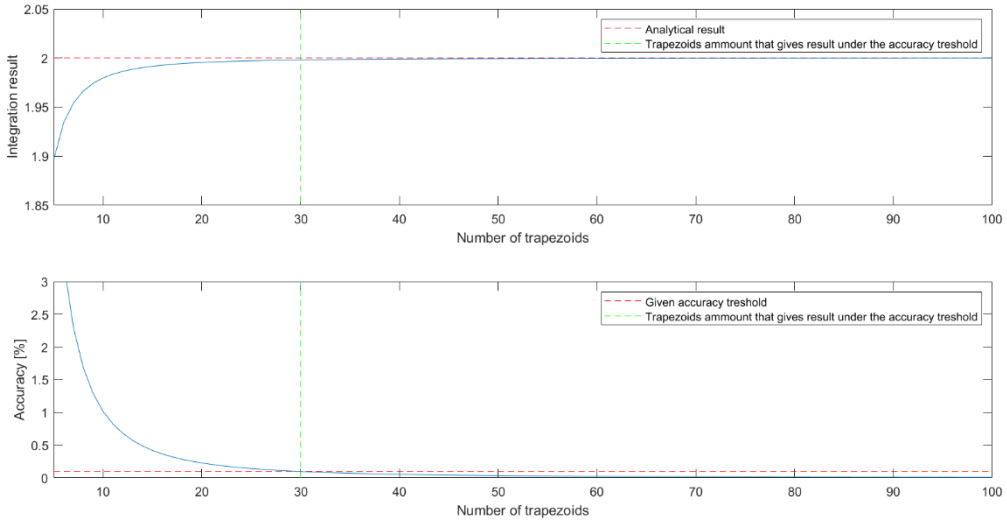
1. Calculate given integral analyticaly

$$\int_0^{\pi} \sin(x)\,dx = \left[\int \sin(x)\right]\Big|_0^{\pi} = [-\cos(x) + C]|_0^{\pi} = -\cos(\pi) + \cos(0) = -(-1) + 1$$
$$= 1 + 1 = 2$$

2. Comparison of analytical and numerical results for accuracy threshold under 0.1 %




If number of trapezoids grows accuracy falls. Accuracy was calculated as relative error between analytical result and numerical. 30 trapezoids used for trapezoidal integration of integral from point 1 gives accuracy under 0.1 %.