1. Find the sum 3 + 5 + 7 + 9 + 11. use colon (`:`) operator and **`sum`** function.

2. Find the sum of the first n terms of the harmonic series where n is an integer greater than one.

$$\sum_{i=1}^{n} \frac{1}{i} = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \cdots$$

3. Find the sum of the first five terms of the geometric series:

$$1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \cdots$$

4. Find the following sum by first creating vectors for the numerators and denominators:

$$\frac{3}{1} + \frac{5}{2} + \frac{7}{3} + \frac{9}{4}$$

5. Create a matrix and find the product of each row and column using **`prod`**.

6. Create a 3x5matrix. Perform each of the following:

Find the maximum value in each column.
Find the maximum value in each row.
Find the maximum value in the entire matrix

7. Consider *Riemann zeta function*

$$\zeta(s) = \sum_{n=1}^{\infty} \frac{1}{n^s}$$

Euler's approach on *Basel Problem* shows $\zeta(2) = \pi^2/6$.

$$\zeta(2) = \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \cdots = \frac{\pi^2}{6}$$

Find π by an accuracy of 3 digits.

8. For the following vectors and matrices A, B, and C:

$$A = \begin{bmatrix} 4 & 1 & -1 \\ 2 & 3 & 0 \end{bmatrix} \quad B = \begin{bmatrix} 1 & 4 \end{bmatrix} \quad C = \begin{bmatrix} 2 \\ 3 \end{bmatrix}$$

Perform the following operations, if possible. If not, just say it can't be done!

```
A*B
B*C
C*B
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