Spring 2024 Math 102, Section 11
Quiz 2

Name: _____

Time limit: 20 minutes

1. (1 point) Write down an explicit formula for c_n such that

$$\cos(x) = \sum_{n=0}^{\infty} c_n \cdot x^{2n}$$

for every $x \in \mathbb{R}$. You don't have to justify why the formula is valid.

2. (9 points) Show that

$$\sum_{n=0}^{\infty} \frac{(-1)^n \cdot \pi^{2n+2}}{9^n \cdot (2n)! \cdot (n+1)} = 3\pi\sqrt{3} - 9\,.$$

Note: You may assume the series converges. You will **NOT** receive any partial credit for only establishing convergence of the series without computing its exact value.