1. Find the exact value of \(1 - \frac{1}{3!} + \frac{1}{5!} - \ldots\).

2. At SMT 2008, we met a man named Bill who has an infinite amount of time. This year, he is walking continuously at a speed of \(\frac{1}{1+t^2}\), starting at time \(t = 0\). If he continues to walk for an infinite amount of time, how far will he walk?

3. Evaluate \(\lim_{x \to 0} \frac{10x^2}{\sin^2(3x)}\).

4. Compute \(\int_{0}^{1} \tan^{-1}(x)dx\)

5. Let \(a(t) = \cos^2(2t)\) be the acceleration at time \(t\) of a point particle traveling on a straight line. Suppose at time \(t = 0\), the particle is at position \(x = 1\) with velocity \(v = -2\). Find its position at time \(t = 2\).

6. Find \(\sum_{n=2}^{\infty} \frac{d^n}{dx^n}(e^{-ax})\) for \(|a| < 1\).

7. Compute \(\lim_{n \to \infty} \sum_{k=1}^{n} \frac{n-k}{n^2} \cos\left(\frac{4k}{n}\right)\).

8. Evaluate \(\int_{0}^{\infty} 4|x+7|e^{-2x}dx\). Remember to express your answer as a single fraction.

9. Compute \(\sum_{n=0}^{\infty} n \left(\frac{1}{5}\right)^n\).

10. Evaluate \(\sum_{n=1}^{\infty} \frac{1}{50 + n^2/80000}\), as a decimal to the nearest tenth.