1. [12 points] Compute the exact value of each of the following, if possible. Your answers should not involve integration signs, ellipses or sigma notation. For any values which do not exist, write **DNE**. You do not need to show work.

a. [2 points] The integral $\displaystyle\int_{-10}^{10} (f(x)+1)\ \mathrm{d}x$, where $f(x)$ is an odd function.

Answer: 20

b. [2 points] The integral $\displaystyle\int_{-3}^{4} \frac{1}{x^4}\ \mathrm{d}x$.

Answer: **DNE**

c. [2 points] The sum $\displaystyle\sum_{n=0}^{2023} 7(5)^n$.

Answer: $\dfrac{7(1-5^{2024})}{1-5} = \dfrac{7}{4}(5^{2024}-1)$

d. [2 points] The **radius of convergence** for the Taylor series centered around $x=0$ for the function $g(x) = (1+3x^2)^{1/5}$.

Answer: $\dfrac{1}{\sqrt{3}}$

e. [2 points] The infinite sum $(0.5)^2 - \dfrac{(0.5)^4}{2} + \dfrac{(0.5)^6}{3} - \cdots + \dfrac{(-1)^{n+1}(0.5)^{2n}}{n} + \cdots$.

Answer: $\ln\left(\dfrac{5}{4}\right)$

f. [2 points] The value of $h''(2)$ where the fourth-degree Taylor polynomial for $h(x)$ about $x=2$ is given by $P_4(x) = 2 + 9(x-2) - 81(x-2)^4$.

Answer: **0**