2. [6 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 value of $G'(2)$ if $G(x) = \displaystyle\int_1^{3-x} e^{t^3}\,\mathrm{d}t$.

Answer: _____

b. [2 points] The infinite sum $-1 + \dfrac{5^2}{2!} - \dfrac{5^4}{4!} + \dfrac{5^6}{6!} - \cdots + \dfrac{(-1)^{n+1}5^{2n}}{(2n)!} + \cdots$.

Answer: _____

c. [2 points] The infinite sum $\displaystyle\sum_{n=0}^{\infty} 3(4^n)$.

Answer: _____

3. [8 points] The two parts of this problem ask about **the same** series. No justification is required for your answers.

a. [4 points] Which of the following series converge? Circle **all** options that apply.

i. $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^n}{n+1}$ iii. $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^{2n}}{n^{1/2}}$ v. $\displaystyle\sum_{n=1}^{\infty} \frac{\sin(n)}{n^2}$ vii. NONE OF THESE

ii. $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^n n}{n+3}$ iv. $\displaystyle\sum_{n=1}^{\infty} \frac{(-4)^n}{5^n}$ vi. $\displaystyle\sum_{n=3}^{\infty} \frac{(-1)^n}{n\ln(n)}$

b. [4 points] Which of the following series converge **conditionally**? Circle **all** options that apply.

i. $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^n}{n+1}$ iii. $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^{2n}}{n^{1/2}}$ v. $\displaystyle\sum_{n=1}^{\infty} \frac{\sin(n)}{n^2}$ vii. NONE OF THESE

ii. $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^n n}{n+3}$ iv. $\displaystyle\sum_{n=1}^{\infty} \frac{(-4)^n}{5^n}$ vi. $\displaystyle\sum_{n=3}^{\infty} \frac{(-1)^n}{n\ln(n)}$