DATE: _____

Convergence Practice

1. Which of the following series converge?

I. $\sum_{n=1}^{\infty} \frac{1}{n^2}$

II. $\sum_{n=1}^{\infty} \frac{1}{n}$

III. $\sum_{n=1}^{\infty} \frac{(-1)^n}{\sqrt{n}}$

(A) I only

(B) III only

(C) I and II only

(D) I and III only

(E) I, II, and III

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2. What are all values of x for which the series $\sum_{n=1}^{\infty} \frac{(x-1)^n}{n}$ converges?

(A) $-1 \leq x < 1$

(B) $-1 \leq x \leq 1$

(C) $0 < x < 2$

(D) $0 \leq x < 2$

(E) $0 \leq x \leq 2$

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3. Which of the following series converge?

I. $\sum_{n=1}^{\infty} (-1)^{n+1} \frac{1}{2n+1}$

II. $\sum_{n=1}^{\infty} \frac{1}{n} (\frac{3}{2})^n$

III. $\sum_{n=2}^{\infty} \frac{1}{n \ln n}$

(A) I only

(B) II only

(C) III only

(D) I and III only

(E) I, II, and III

4. The complete interval of convergence of the series

$$\sum_{k=1}^{\infty} \frac{(x+1)^k}{k^2}$$

is:

(A) $0 < x < 2$

(B) $0 \leq x \leq 2$

(C) $-2 < x \leq 0$

(D) $-2 \leq x < 0$

(E) $-2 \leq x \leq 0$

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5. What are all values of *x* for which the series

$$\sum_{n=1}^{\infty} \frac{(x+2)^n}{\sqrt{n}}$$

converges?

(A) $-3 < x < -1$

(B) $-3 \leq x < -1$

(C) $-3 \leq x \leq -1$

(D) $-1 \leq x < 1$

(E) $-1 \leq x \leq 1$