4. *Show your work and circle the correct answer.*

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

~~A)~~ $-1 \le x < 1$ C) $0 < x < 2$ E) $0 \le x \le 2$
~~B)~~ $-1 \le x \le 1$ D) $0 \le x < 2$

$$\lim_{n\to\infty} \frac{(x-1)^{n+1}}{n+1} \cdot \frac{n}{(x-1)^n}$$

$$= (x-1)$$

$$-1 < x-1 < 1 \quad \text{Radius: } 1$$
$$+1 \quad +1 \quad +1$$

$$0 \le x < 2$$

Converges AST — diverges P-series

5. *Show your work and circle the correct answer.*

. The interval of convergence of $\sum_{n=0}^{\infty} \frac{(x-1)^n}{3^n}$ is

A) $-3 < x \le 3$ D) $-2 < x < 4$ E) $0 \le x \le 2$
B) $-3 \le x \le 3$

$$\lim_{n\to\infty} \frac{(x-1)^{n+1}}{3^{n+1}} \cdot \frac{3^n}{(x-1)^n} = \frac{x-1}{3}$$

$$-1 < \frac{x-1}{3} < 1$$

$$-3 < x-1 < 3 \quad \text{Radius: } 3$$
$$+1 \quad +1 \quad +1$$

$$-2 < x < 4$$

diverges Geometric — Diverges Geometric

6. *Show your work and circle the correct answer.*

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

A) $-3 < x < -1$ ~~C)~~ $-3 \le x \le -1$ ~~E)~~ $-1 \le x \le 1$
D) $-3 \le x < -1$ ~~D)~~ $-1 \le x < 1$

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

$$-1 < x+2 < 1 \quad \text{Radius: } 1$$
$$-2 \quad -2 \quad -2$$

$$-3 \le x < -1$$

Converges AST — Diverges p-series

Answers are on the WEEBLY → UNIT 6 REVIEW