TOPIC: LIMITS OF SEQUENCES

Limits of Sequences

◆ Like functions, the limit of a sequence is the value the sequence goes to as ____ gets really *BIG* (approaches ∞)

- If the limit _____ the sequence **converges** to a value (called $\boldsymbol{L}$). If the limit _____ the sequence **diverges**.

EXAMPLE Determine if the sequence converges or diverges.

$(\boldsymbol{A})$

$$a_n = \frac{1}{n}$$

$$\lim_{n\to\infty} a_n = \_\_\_\_\_$$

[CONVERGES | DIVERGES]

$(\boldsymbol{B})$

$$a_n = \frac{8}{n} \cdot \frac{n(n+1)}{3}$$

$$\lim_{n\to\infty} a_n = \_\_\_\_\_$$

[CONVERGES | DIVERGES]

$(\boldsymbol{C})$

$$a_n = (-1)^n$$

$$\lim_{n\to\infty} a_n = \_\_\_\_\_$$

[CONVERGES | DIVERGES]

TOPIC: LIMITS OF SEQUENCES

PRACTICE Evaluate $\lim_{n\to\infty} a_n$ and determine whether the sequence converges or diverges.

$$a_n = 5 \cdot \cos\left(\frac{14}{n^2}\right)$$

PRACTICE Evaluate $\lim_{n\to-\infty} a_n$ and determine whether the sequence converges or diverges.

$$a_n = 300 \cdot \sin\left(\frac{n^2 - 120}{n}\right)$$