Math 142 – Calculus 2 Name___________________

Section 10.1 Video Worksheet

Sequences

An infinite sequence of numbers is a function whose domain is the set of positive integers

The sequence $\{a_n\}$

If no such number L exists,

If $\{a_n\}$ converges to L we write

The sequence $\{\sqrt{n}\}$

The sequence $\{a_n\}$ diverges to infinity if

Let $\{a_n\}$ and $\{b_n\}$ be sequences of real numbers and let A and B be real numbers. The following rules hold if

Sum Rule

Quotient Rule

Difference Rule

Product Rule

Constant Multiple Rule

The sandwich theorem for sequences

If $|b_n| \le c_n$ and $c_n \to 0$ then $b_n \to 0$

$$\lim_{n\to\infty} \frac{1}{n} = 0$$

$$\lim_{n\to\infty} K = K$$

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

$$\lim_{n\to\infty} \frac{\cos n}{n} = 0$$

$$\lim_{n\to\infty} \frac{1}{2^n} =$$

$$\lim_{n\to\infty} (-1)^n \left(\frac{1}{n}\right) = 0$$

$$\lim_{n\to\infty} \sqrt{\frac{n+1}{n}} =$$

$$\lim_{n\to\infty} \frac{\ln n}{n} =$$

$$\lim_{n\to\infty} \frac{2^n}{5n} =$$

$$\lim_{n\to\infty} \sqrt[n]{n} =$$

$$\lim_{n\to\infty} x^{\frac{1}{n}} = 1$$

$$\lim_{n\to\infty} x^n = 0$$

$$\lim_{n\to\infty} \left(1+\frac{x}{n}\right)^n = e^x$$

$$\lim_{n\to\infty} \frac{x^n}{n!} = 0$$

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

$$1, -\frac{1}{4}, \frac{1}{9}, -\frac{1}{16}, \frac{1}{25}, \ldots.$$

$$a_1 = 2 \quad a_2 = 1 \quad a_{n+2} = \frac{a_{n+1}}{a_n}$$

$$a_n = \frac{n + (-1)^n}{n}$$

$$a_n = (-1)^n \left(1 - \frac{1}{n}\right)$$

$$a_n = \frac{\sin^2 n}{2^n}$$