

sequences, ..., sequences, ...

1. Find the general term for each of the following sequences. Then determine whether or not the sequence converges. If the sequence does converge, find its limit.

(a)

$$\frac{1}{4}, \frac{1}{16}, \frac{1}{64}, \dots = \frac{1}{256}, \frac{1}{1024}, \dots$$

(b)

$$\frac{1}{3}, \frac{2}{4}, \frac{3}{5}, \dots = \frac{4}{6}, \frac{5}{7}, \dots$$

(c)

$$1, -\frac{1}{2}, \frac{1}{4}, -\frac{1}{8}, \dots = \frac{1}{16}, \dots$$

(d)

$$1, -1, 1, -1, 1, \dots$$

2. Write out the first six terms of the sequence below (decimal form). Does the sequence converge or diverge?

$$\left\{ n \sin \left( \frac{\pi}{n} \right) \right\}_1^{+\infty}$$

3. Write the first five terms of the sequence defined below (decimal form). If the sequence converges, what is its limit?

$$a_{n+1} = \sqrt{a_n + 2}, \quad a_1 = 0$$