

## Section 9.1

After viewing the lecture videos and reading the textbook, you should be able to answer the following questions:

1. What is a sequence?
2. What is the 10<sup>th</sup> term of the sequence  $\frac{1}{2}, -\frac{2}{3}, \frac{3}{4}, -\frac{4}{5}, \dots$
3. Write the first 5 terms of  $\left\{(-1)^{n+1} \cdot \frac{n}{n+1}\right\}_{n=1}^{+\infty}$ .
4. Do the following sequences converge or diverge? If they have a limit, find the limit.
  - a.  $\left\{\frac{n}{2n+1}\right\}_{n=1}^{+\infty}$
  - b.  $\left\{(-1)^{n+1} \frac{n}{2n+1}\right\}_{n=1}^{+\infty}$
  - c.  $\left\{(-1)^{n+1} \frac{1}{n}\right\}_{n=1}^{+\infty}$
  - d.  $\{8 - 2n\}_{n=1}^{+\infty}$
  - e.  $\left\{\frac{n}{e^n}\right\}_{n=1}^{+\infty}$
5. Does the sequence  $\{\sin(n)\}_{n=1}^{+\infty}$  converge or diverge? If it converges, find its limit.
6. Does the sequence  $\{\sin(2\pi n)\}_{n=1}^{+\infty}$  converge or diverge? If it converges, find its limit.