

## Sequences- HW Problems

Find the limit of the following sequences if they exist. If the sequence diverges, say so.

1.  $a_n = \frac{2n^2+1}{n^2+3}$

2.  $a_n = \frac{n^3+n}{n^2+3}$

3.  $a_n = \frac{(-1)^n}{\ln(n)}$

4.  $a_n = \frac{n^4}{2^n}$

5.  $a_n = \frac{n^n}{n!}$

6.  $a_n = \sin\left(\frac{1}{n+1}\right)$

7.  $a_n = e^{-n}$

8.  $a_n = (-1)^n e^{\frac{1}{n}}$

9.  $a_n = \frac{4^n}{5^n}$

10.  $a_n = \frac{n^3}{\sqrt{n^5+3}}$