

Calc II Problem sheet

Tuesday, June 29

1. Write down a careful justification of the fact that

$$\lim_{n \rightarrow \infty} \frac{3n^3 - n + 2}{n^3 + 2n^2 - 1} = 3.$$

2. Determine whether each of the following series

- Diverges,
- Diverges to ∞ ,
- Diverges to $-\infty$, or
- Converges

If the series does converge, then find the limit.

(a) $a_n = \frac{2^n}{n^2}$

(b) $a_n = \frac{(-2)^n}{n^2}$

(c) $a_n = \frac{\cos(n)}{n^2}$

(d) $a_n = e^{\frac{\cos(n)}{n^2}}$