

HW 2: Sequence problems Due Feb 7. Math 414 Spring 20

1) Prove the following limits using either the definition of limit of a sequence or theorems in Section 2.1.

a) $\lim_{n \rightarrow \infty} \frac{n+1}{n-1/2} = 1$

b) $\lim_{n \rightarrow \infty} \frac{3^n}{n!} = 0$

2) Prove convergence of $\{x_n\}$ using the Squeeze lemma:

a) $x_n = \frac{n^2 - 3n + 7}{n^3 - 4n - 1}$

b) $x_n = \frac{n + \sin n}{2n}$

Also do 2.2.8 (use ratio test) and 2.2.12