

M413
Introduction to Analysis I
Assignment VIII

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Section 7.1, numbers 7.1 and 7.2

Question 1. Write out the first five terms of the following sequences.

(a) $s_n = 1/(3n + 1)$

(b) $b_n = (3n + 1)/(4n - 1)$

(c) $c_n = n/3^n$

(d) $\sin(n\pi/4)$

Solution: (a) $s_1 = 1/4, s_2 = 1/7, s_3 = 1/10, s_4 = 1/13, s_5 = 1/16$
(b) $b_1 = 4/3, b_2 = 1, b_3 = 10/11, b_4 = 13/15, b_5 = 16/19$
(c) $c_1 = 1/3, c_2 = 2/9, c_3 = 1/9, c_4 = 4/81, c_5 = 5/243$
(d) $\sqrt{2}/2, 1, \sqrt{2}/2, 0, -\sqrt{2}/2$

□

Question 2. For each of the sequences above, determine whether it converges. If it converges, give its limit. No proofs are required.

Solution: (a) $\lim s_n = 0$
(b) $\lim b_n = 0$
(c) $\lim c_n = 0$
(d) $\lim (\sin(n\pi/4)) = DNE$

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