

Calculus BC Monotonic Sequences (Rokawski's Calculus 10.1 2nd Half)

Lesson 335 | Calculus BC | Sequences and monotonicity

<https://www.youtube.com/watch?v=W5mHieLDaTc>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

For $a_m = 4 - 3/(m+2)$, $m \geq 1$, determine monotonicity, bounds, and the limit.

02

For $a_m = 14 - 4/(m+5)$, $m \geq 1$, determine monotonicity, bounds, and the limit.

03

For $a_m = 2 - 7/(m+6)$, $m \geq 1$, determine monotonicity, bounds, and the limit.

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04

For $a_m = 3 - 11/(m+3)$, $m \geq 1$, determine monotonicity, bounds, and the limit.

05

For $a_m = 6 - 13/(m+5)$, $m \geq 1$, determine monotonicity, bounds, and the limit.

06

For $a_m = 10 - 2/(m+5)$, $m \geq 1$, determine monotonicity, bounds, and the limit.

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01

For $a_m = 4 - 3/(m+2)$, $m \geq 1$, determine monotonicity, bounds, and the limit.

$a_{m+1} - a_m = 3/((m+2)(m+3)) > 0$, so increasing. First term 3 is a lower bound; 4 is a strict upper bound. Limit is 4.

02

For $a_m = 14 - 4/(m+5)$, $m \geq 1$, determine monotonicity, bounds, and the limit.

$a_{m+1} - a_m = 4/((m+5)(m+6)) > 0$, so increasing. First term $40/3$ is a lower bound; 14 is a strict upper bound. Limit is 14.

03

For $a_m = 2 - 7/(m+6)$, $m \geq 1$, determine monotonicity, bounds, and the limit.

$a_{m+1} - a_m = 7/((m+6)(m+7)) > 0$, so increasing. First term 1 is a lower bound; 2 is a strict upper bound. Limit is 2.

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04

For $a_m = 3 - 11/(m+3)$, $m \geq 1$, determine monotonicity, bounds, and the limit.

$a_{m+1} - a_m = 11/((m+3)(m+4)) > 0$, so increasing. First term $1/4$ is a lower bound; 3 is a strict upper bound. Limit is 3.

05

For $a_m = 6 - 13/(m+5)$, $m \geq 1$, determine monotonicity, bounds, and the limit.

$a_{m+1} - a_m = 13/((m+5)(m+6)) > 0$, so increasing. First term $23/6$ is a lower bound; 6 is a strict upper bound. Limit is 6.

06

For $a_m = 10 - 2/(m+5)$, $m \geq 1$, determine monotonicity, bounds, and the limit.

$a_{m+1} - a_m = 2/((m+5)(m+6)) > 0$, so increasing. First term $29/3$ is a lower bound; 10 is a strict upper bound. Limit is 10.