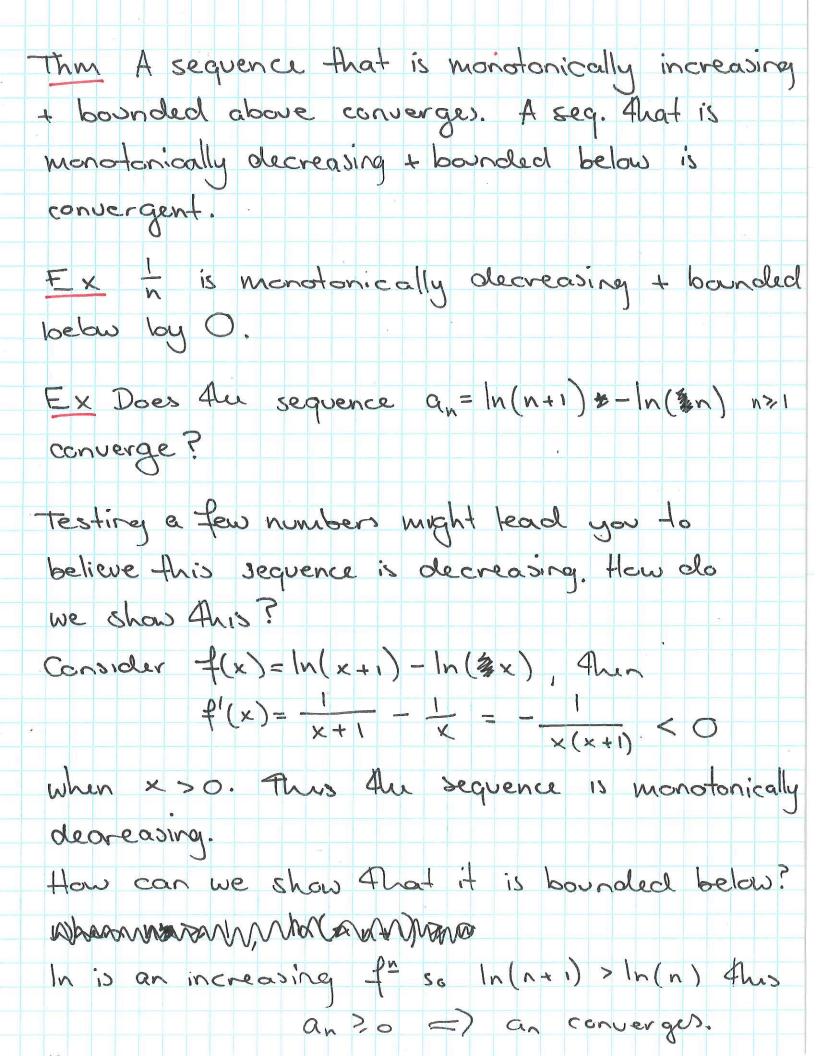
| Bounded + monotone sequences |
|---|
| Def *A sequence (an) is bounded from |
| above if there is a number M such that $a_n \leq M \text{for all } n.$ |
| * A sequence (b,) is bounded from below |
| If Alure is a number N such that an ≥ N for all n. |
| Ex * is bounded above by 1 and below by 0. |
| * $a_n = (-1)^n$ is bounded above by 1 and |
| below by -1. * $C_n = N^2$ is bounded below by 0 but is |
| unbounded above. |
| Def * A seq: (an) is monotonically increasing |
| if an < ant, for all n. * A seq. (an) is monotonically decreasing if |
| $a_n > a_{n+1}$ for all n . |
| |



 $E \times a_n = \sqrt{h^2 + 2n} - n$ Again, we can show that an is increasing by I looking f(x) = 1x2+2x -x àt f'(x) = x +1 -1 we see that since (x+1)2 3, x2+2x TX XX TX $\frac{x+1}{\sqrt{x^2-2x}} > 1 \quad \text{so} \quad f(x) > 0$ Ams (an) is increasing. How was some and a some allo Since n2+2n = (n+1)2, In2+2n = n+1 Au, s an = Tretzn - n × 1 so (an) is an increasing seq. bounded above and Alus converges.