Subject
Assignment Number

November 9, 2024

Author
Roll Number
Class/Batch/Section

---

1. Prove:

$$\lim_{x\to\infty} \frac{3n+1}{2n+1} = 1$$

(1 Mark)

Ans:

$$\left|\frac{3n+1}{2n+1} - \frac{3}{2}\right| = \left|-\frac{1}{4n+2}\right|$$
$$= \left|\frac{1}{4n+2}\right|$$

$\forall \epsilon > 0$, $|\frac{3n+1}{2n+1} - \frac{3}{2}| < \epsilon$, so

$$\frac{1}{4n+2} < \epsilon$$
$$4n+2 > \frac{1}{\epsilon}$$
$$n > \frac{1}{4}\,(frac1\epsilon - 2)$$

2. Q2?
   (a) Part. a
   (b) Hint: These can be nested further (2 Marks)

Ans: A2.

(a) Ans. for (a)

(b) Solution for (b)

3. Q3? (Type anything here)

Ans: A3.