WRITTEN EXERCISES

In Exercises 1–12, find the given limit.

A

1. $\lim_{n\to\infty} \frac{n+5}{n}$

2. $\lim_{n\to\infty} \frac{n^2+1}{n^2}$

3. $\lim_{n\to\infty} \left[1 + \frac{(-1)^n}{n}\right]$

4. $\lim_{n\to\infty} \frac{4n-3}{2n+1}$

5. $\lim_{n\to\infty} \frac{3n^2+5n}{8n^2}$

6. $\lim_{n\to\infty} \frac{2n^4}{6n^5+7}$

7. $\lim_{n\to\infty} \tan\left(\frac{1}{n}\right)$

8. $\lim_{n\to\infty} \sec\left(\frac{1}{n}\right)$

9. $\lim_{n\to\infty} \frac{\sqrt{n}}{n+1}$

10. $\lim_{n\to\infty} \frac{5n^{2/3}-8n}{6n-1}$

11. $\lim_{n\to\infty} \log\left(\frac{n+1}{n}\right)$

12. $\lim_{n\to\infty} \log \sqrt[n]{10}$

In Exercises 13–18, find the limit of the specified sequence or state that the limit does not exist.

13. $\frac{1}{3}, -\frac{1}{9}, \frac{1}{27}, -\frac{1}{81}, \frac{1}{243}, \ldots$

14. $1, -4, 9, -16, 25, -36, \ldots$

15. $\frac{3}{2}, -\frac{4}{3}, \frac{5}{4}, -\frac{6}{5}, \frac{7}{6}, -\frac{8}{7}, \ldots$

16. $\frac{1}{10}, -\frac{2}{10^2}, \frac{3}{10^3}, -\frac{4}{10^4}, \frac{5}{10^5}, \ldots$

17. $t_n = \cos\left(\frac{n\pi}{2}\right)$

18. $t_n = \sin(n\pi)$