



$$2.1 \quad \sum_{n=1}^{\infty} (-1)^n / n \quad \begin{matrix} (-1)^1 = -1 \\ (-1)^2 = \frac{1}{2} \\ (-1)^3 = -\frac{1}{3} \\ (-1)^4 = \frac{1}{4} \\ (-1)^5 = -\frac{1}{5} \\ (-1)^6 = \frac{1}{6} \end{matrix} \quad \lim_{n \rightarrow \infty} \frac{(-1)^n}{n} = \underline{0}$$

$$2.2 \quad \left\{ \frac{5n+7}{n} \right\} \quad L=5$$

$$|a_n - 5| = \left| \frac{5n+7}{n} - 5 \right| = \frac{7}{n}$$

$$\frac{7}{n} < \varepsilon$$

$$n > \frac{7}{\varepsilon} \quad A = \frac{7}{\varepsilon}$$

$$2.2.30) \left\{ n \cdot \sin \frac{1}{n} \right\}_{n=1}^{\infty} \quad \lim_{n \rightarrow \infty} n \cdot \sin \frac{1}{n} = \lim_{n \rightarrow \infty} n \cdot 0 = \underline{0}$$

$$b) \left\{ \frac{2n^2}{\sqrt{n} + n^2} \right\} \quad \lim_{n \rightarrow \infty} \frac{2n^2}{\sqrt{n} + n^2} = \frac{2 \cdot 1}{0+1} = \underline{2}$$

$$c) \left\{ \frac{\left(\frac{1}{3}\right)^n - \left(\frac{4}{3}\right)^n}{\left(\frac{2}{3}\right)^n} \right\} =$$

$$d) \left\{ \frac{1 + (-1)^n n^2}{n^3 + 1} \right\} = \lim_{n \rightarrow \infty} \frac{1 + (-1)^n n^2}{n^3 + 1} = \frac{0+0+0}{1+0} = \underline{0}$$

$$2.3.4 a) \vee i \quad \lim_{n \rightarrow \infty} a_n = 1$$

$$a_{n+1} = \frac{1}{2} a_n - \frac{5}{2} = \frac{1}{2} \cdot 1 - \frac{5}{2} = -\frac{4}{2} = -2$$

$$a_1 > -5 \quad a_n > -5$$

$$a_{n+1} = \frac{1}{2} \cdot 1 - \frac{5}{2} = \underline{-2}$$

