Worksheet 2023-12ℰD-00007(1) Geometric sequences

(1) Write the next three terms in each of the following sequences:
[Also indicate which of the sequences are geometric sequences. (GS)]

(a) $2\ ;\ 10\ ;\ 50\ ;\ 250\ ;$ _____

(b) $31\ ;\ 39\ ;\ 47\ ;\ 55\ ;$ _____

(c) $1\,011\ ;\ 1\,008\ ;\ 1\,005\ ;\ 1\,002\ ;$ _____

(d) $-0{,}17\ ;\ -0{,}37\ ;\ -0{,}57\ ;\ -0{,}77\ ;$ _____

(e) $\frac{1}{8}\ ;\ \frac{3}{7}\ ;\ \frac{9}{6}\ ;\ \frac{27}{5}\ ;$ _____

(f) $\frac{1}{2}\ ;\ 1\ ;\ 2\ ;\ 4\ ;$ _____

(2) Write the first four terms in each of the following sequences:

[Also indicate which of the sequences are geometric sequences. (GS)]

(a) $T_n = -4n$ _____

(b) $T_n = 3^n$ _____

(c) $T_n = n - 5$ _____

(d) $T_n = 2n + 1$ _____

(e) $T_n = n^2 - 1$ _____

(f) $T_n = 3^{n+1}$ _____

(3) Consider the sequence: $6\ ;\ 2\ ;\ \frac{2}{3}\ ;\ \frac{2}{9}\ ;\ \ldots\ldots$

(a) Calculate the general term of the sequence.

(b) Calculate T_{11}.

(c) Calculate n if $T_n = \frac{2}{729}$.

(4) Consider the sequence: $-5\ ;\ 10\ ;\ -20\ ;\ 40\ ;\ \ldots\ldots$

(a) Is this sequence converging? Motivate.

(b) Calculate the general term of the sequence.

(c) Calculate T_{16}.

(d) Calculate n if $T_n = -5\ 120$.