Recurrence Relations

Generate the first five terms of each sequence:

(a) $u_{n+1} = u_n - 3 \quad u_1 = 41$

(b) $u_{n+1} = 2u_n \quad u_1 = 6$

(c) $u_{n+1} = 3u_n + 1 \quad u_1 = 1$

(d) $u_{n+1} = \frac{1}{2}u_n - 2 \quad u_1 = 16$

(e) $u_{n+1} = 10 - u_n \quad u_1 = 3$

Generate the first five terms of each sequence.

(a) $u_{n+1} = \frac{2+u_n}{3} \quad u_1 = 1$

(b) $u_{n+1} = \frac{8}{u_n - 1} \quad u_1 = 3$

(c) $u_{n+1} = 1.15u_n \quad u_1 = 200$

(d) $u_{n+1} = 5 + {u_n}^2 \quad u_1 = -2$

Write each of these sequences using a recurrence formula.

(a) $12, 10, 8, 6, 4, \ldots$

(b) $-3, 1, 5, 9, 13, \ldots$

(c) $2, 20, 200, 2000, 20000, \ldots$

Generate u_3, u_4 and u_5 for each of these recurrence relations.

(a) $u_{n+2} = u_{n+1} + u_n$
where $u_1 = 1, u_2 = 2$

(b) $u_{n+2} = 3u_{n+1} - u_n$
where $u_1 = -5, u_2 = -1$

(c) $u_{n+2} = \frac{u_{n+1} + u_n}{2}$
where $u_1 = 6, u_2 = 4$

(a) A sequence is defined by the formula $u_{n+1} = 5a - 2u_n \quad u_1 = a$
Find the first five terms of the sequence, giving your answers in their simplest form.

(b) Given that the sequence $3, 11, 27, 59, \ldots$ can be defined by the formula $u_{n+1} = au_n + b$, find the values of a and b.

Recurrence Relations

Generate the first five terms of each sequence:

(a) $u_{n+1} = u_n - 3 \quad u_1 = 41$

(b) $u_{n+1} = 2u_n \quad u_1 = 6$

(c) $u_{n+1} = 3u_n + 1 \quad u_1 = 1$

(d) $u_{n+1} = \frac{1}{2}u_n - 2 \quad u_1 = 16$

(e) $u_{n+1} = 10 - u_n \quad u_1 = 3$

Generate the first five terms of each sequence.

(a) $u_{n+1} = \frac{2+u_n}{3} \quad u_1 = 1$

(b) $u_{n+1} = \frac{8}{u_n - 1} \quad u_1 = 3$

(c) $u_{n+1} = 1.15u_n \quad u_1 = 200$

(d) $u_{n+1} = 5 + {u_n}^2 \quad u_1 = -2$

Write each of these sequences using a recurrence formula.

(a) $12, 10, 8, 6, 4, \ldots$

(b) $-3, 1, 5, 9, 13, \ldots$

(c) $2, 20, 200, 2000, 20000, \ldots$

Generate u_3, u_4 and u_5 for each of these recurrence relations.

(a) $u_{n+2} = u_{n+1} + u_n$
where $u_1 = 1, u_2 = 2$

(b) $u_{n+2} = 3u_{n+1} - u_n$
where $u_1 = -5, u_2 = -1$

(c) $u_{n+2} = \frac{u_{n+1} + u_n}{2}$
where $u_1 = 6, u_2 = 4$

(a) A sequence is defined by the formula $u_{n+1} = 5a - 2u_n \quad u_1 = a$
Find the first five terms of the sequence, giving your answers in their simplest form.

(b) Given that the sequence $3, 11, 27, 59, \ldots$ can be defined by the formula $u_{n+1} = au_n + b$, find the values of a and b.