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# Questions:

Write the first four terms of the sequences defined by the formulas:

(a) $\frac{3}{1}, \frac{7}{4}, \frac{4}{3}, \frac{9}{8}$

(b) $\frac{5}{3}, \frac{3}{1}, \frac{7}{1}, 0$

# Question:

$e_m = 2 + (\frac{1}{3})^m$, for all integers $m \geq 0$.

(a) Write the first four terms of the sequence.

$3, \frac{7}{3}, \frac{19}{9}, \frac{55}{27}$

(b) Show that the sequence converges to 2 as m approaches infinity

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# Questions:

Find explicit formulas for sequences of the form a1, a2, a3, . . . with the initial terms given in the following exercise:

(a)

$a_n = (-1)^{n+1}$

(b)

$a_n = (-1)^{n+1} | \frac{n}{2} |$

(c)

$a_n = \frac{2n-1}{2n}$

# Question

Compute the summations and products:

(a)

33

(b)

3600

# Question

Prove the following proposition using mathematical induction:

$P(n) : 1 + 2 + 4 + 8 + \cdots + 2^n = 2^{n+1} - 1$

(a) Prove the base case P(0).

$2^0 = 1$

$2^{0+1} - 1 = 2^1 - 1 = 2 - 1 = 1$

$1 = 1, \text{this is true so base case is correct}$

(b) Assume P (k) is true and prove P (k + 1).

Since P(0) is true and P(k) were assuming is true, using induction we can conclude P(n) holds for all non-negative integers