Math 114
Sequences & Series / Linear Systems Review

[1]   You must show the use of the appropriate sequence and/or series formulae.

    [a]   Find a_{36} for the arithmetic sequence $-28, -22, -16, -10, -4, \cdots$.

    [b]   Find a_{20} for the geometric sequence $5, -10, 20, -40, 80, \cdots$.

    [c]   Find a_{24} for the arithmetic sequence with $a_3 = 20$ and $a_{10} = -3$.

    [d]   Find the sum of the first 25 terms of the sequence in part [a].

    [e]   Find the sum of the first 15 terms of the sequence in part [b].

    [f]   Find the sum of the infinite geometric series $\dfrac{9}{20} - \dfrac{3}{10} + \dfrac{1}{5} \cdots$.

    [g]   Convert $0.314141414\ldots$ to a fraction.

    [h]   Find $\displaystyle\sum_{n=1}^{\infty} \dfrac{5}{2(3)^{n+1}}$.

[2]   You started a new job which paid \$3,000 per month. After exactly 6 years, you left the job.

    [a]   If you received a 0.3% raise each month, what was your monthly pay when you left ?

    [b]   If you received a \$10 per month raise each month, what was your monthly pay when you left ?

    [c]   In part [a], how much were you paid during the 6 years ?

    [d]   In part [b], how much were you paid during the 6 years ?

[3]   You deposit \$2,000 into your retirement account at the beginning of every year for 30 years. The account earns 4.5% interest compounded annually. How much is in the account at the end of the 30 years ?

[4]   Solve the system $\begin{array}{l} 2x - 3y = 17 \\ 3x + 4y = 51 \end{array}$ using elimination.

ANSWERS

[1]   [a]   182   [b] -2621440 [c] -49

    [d]   1100   [e]   54615   [f] $\dfrac{27}{100}$

    [g] $\dfrac{311}{990}$ [h] $\dfrac{5}{12}$

[2]   [a]   3710.97   [b]   3710   [c]   240701.13   [d]   241560

[3]   127504.78

[4] $(13, 3)$