Advanced Algebra

Arithmetic Sequences

Assignment #2

Remember: The nth term of an arithmetic sequence with first term U_1 and common difference d is given by the formula $U_n = U_1 + (n-1)d$

Solve the following. Assume each sequence is an arithmetic sequence.

1) Find the 19th term in the sequence for which $U_1=11$ and $d=-2$

2) Find the 16th term in the sequence for which $u_1=1.5$ and $d=.5$

3) Find n for the sequence for which $u_n=37$ $u_1=-13$ and $d = 5$

4) Find n for the sequence for which $u_n=633$ $u_1=9$ and $d = 24$

5) Find the first term in the sequence for which $d=-2$ and $U_7 = 3$

6) Find the first term in the sequence for which $d = \frac{2}{3}$ and $u_8 = 15$ First Term is $10\frac{1}{3}$

7) Find d for the sequence for which $U_1 =4$ and $u_{11} = 64$

8) Find d for the sequence for which $U_1 = -6$ and $u_{29} = 20$

9) Find the 43rd term in the sequence -19,-15,-11,...

10)Find the 58th term in the sequence 10,4,-2,...

① $U_{19} = 11 + 18(-2)$

$U_{19} = -25$

② $U_{16} = 1.5 + 15(.5)$

$U_{16} = 9$

③ $37 = -13 + (n-1)5$

$10 = n-1$

$11 = n$

It is the 11th Term

④ $633 = 9 + (n-1)24$

$26 = n-1$

$27 = n$

It is the 27th Term

⑤ $3 = U_1 + 6(-2)$

$15 = U_1$

⑥ $15 = U_1 + 7\left(\frac{2}{3}\right)$

$15 = U_1 + \frac{14}{3}$

$\frac{45}{3} = U_1 + \frac{14}{3}$

$\frac{31}{3} = U_1$

$U_1 = 10\frac{1}{3}$

(#7) $64 = 4 + 10(d)$

$60 = 10d$

$\boxed{6 = d}$

common difference is 6

(8) $20 = -6 + 28(d)$

$26 = 28d$

$\boxed{.929 = d}$

check

$-6 + 28(.929) = U_{29}$

$20.012 = U_{29}$

* Keeping it as Fraction would have been more accurate

(9) $-19, -15, -11$

43^{rd} Term

$U_{43} = -19 + 42(4)$

$\boxed{U_{43} = 149}$

(10) $10, 4, -2$

$U_{58} = 10 + 57(-6)$

$\boxed{U_{58} = -332}$