HW 2.1

March 8, 2015 2:45 PM

Hw #9)

$T_n = 3n-1$

$T_1 = 2$

$T_2 = 5$

$T_3 = 8$

$T_4 = 11$

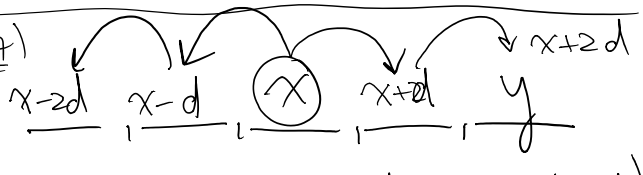
$$S_n = \frac{n}{2}\left(2(a) + (n-1)d\right)$$

$$= \frac{n}{2}\left(4 + (n-1)3\right)$$

$$= \frac{n}{2}\left[4 + 3n - 3\right]$$

$$= \frac{n}{2}\left[1 + 3n\right]$$

#7)



$x + 2d = y$

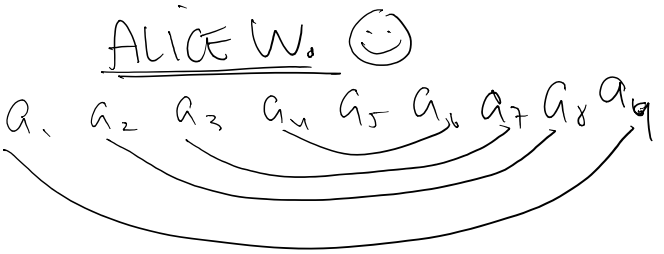
$2d = y - x$

$t_1 = x - (2d)$

$= x - (y - x)$

$= 2x - y$

ALICE W. ☺



5)

$a_5 + a_7 = -17$ $\quad a_4 + a_6 = 1$

$\frac{73}{2}$

$a \quad a+d \quad a+2d \quad a+3d \quad a+4d \quad a+5d \quad a+6d$

$2a + 10d = -17$

$2a + 8d = 1$ $\quad 2a + 8(d) = 1$

$2d = -18$

$d = -9$

$2a = 1 + 72$

$a = \frac{73}{2}$

$$S_n = \frac{9}{2}(a_4 + a_6)$$

$$= \frac{9}{2}(1)$$

$$= \frac{9}{2}$$

$$S_9 = \frac{9}{2}\left[2\left(\frac{73}{2}\right) + (8)(-9)\right]$$

$\left(\frac{n}{2}\right)\ 2a + (n-1)d$

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14) 1 2 3 4 5 6 (7) 8 9 ---- (19) ---- (294) 300

$7(1) + 7(2) + \cdots\cdots + 7(42)$

$n = 42$
$d = 7$
$a = 7$

16)

must include last term

$a, \underline{a+d}, \underline{a+2d}, \underline{a+3d}, \underline{a+4d}, \underline{a+5d}, \underline{a+6d}, a+7d, \ldots$

① $a + a+2d + a+4d + a+6d + a+8d + \ldots a+6kd = 320$

# of terms = $3k+1$

② $a + a+3d + a+6d + a+9d + \ldots\ldots a+6kd = 224$

# of terms = $2k+1$

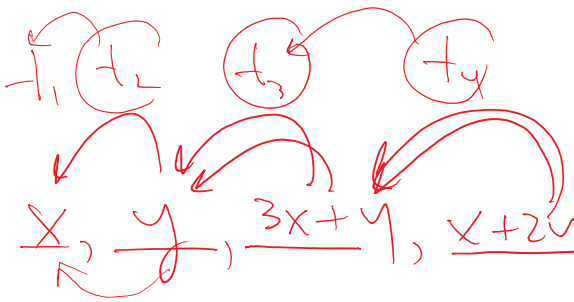
2 step: How many terms are in each seq.

$(3k+1)\left(\frac{\text{PAIR}}{2}\right) = 320$

$(2k+1)\left(\frac{\text{PAIR}}{2}\right) = 224$

← DIVIDE THEM THEN SOLVE FOR "k"

③ AFTER YOU FIND "k", FIND THE VALUE OF EACH "PAIR".



10) $x, y, 3x+y, x+2y+2$

"$y-x$" = ??

① $y - x = 3x + y - y$

$y - x = 3x$

$y = 4x$

② $x + 2y + 2 - 3x - y = 3x + y - y$

$y + 2 = 5x$

$y = 5x - 2$

$y = 4x$

$y = 8$

$4x + 2 = 5x$

$2 = x$

$y - x = x + 2y + 2 - 3x - y$

$=$

$2x = x + 2$

$x = 2$

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Ch 2.1 By Alice Wang

(a) $t_{16} = 58$

b) $t_9 = 72$

c) $t_8 = -9.2$

d) $t_8 = \frac{65}{6}$

e) $t_6 = 21$

f) $t_6 = 32$

2)

	# of terms	sum
a)	52	-8497.5
b)	$a + t_{63} - 1)12$	
c)	$= a + 22$	165
d)	$= 81$	-488
e)	31	2697

f) $x = 4$ or 2, multiple answers?

4. $\frac{3 + 5 + 9 + 12 + 21}{5} = $ d) 10

5. $a + d = 2a$ $\quad 2a + d = b$ $\quad b + d = a - b - b$

$d = a$ $\quad d = b - 2a$ $\quad d = a - 2b - b$

$b = 3a$

$a = a - 2(3a) - b$

$a = -1$

$b = -3$

$d = -1$

$t_{100} = -1 + (100 - 1)1$

$= -1 + (-99)$

$t_{100} =$ a) -100

6. i) $T_n = 2n - 3$

ii) is geometric

7. $\underbrace{a}, —, x, —, y$

$a + y = 2x$

$a = 2x - y$

i) $2x - y$

8. $-16, -14.75, -13.5$

$+1.25 \quad +1.25$

$t_n = -16 + (n-1)1.25$

$t_n = 1.25n - 17.25$

$1.25 \times 14 > 17.25$

$n = 14, \; t_n = 0.25$

9. $T_1 = 2 \quad T_2 = 5 \quad T_3 = 8$

iii) $\frac{n(3n+1)}{2}$

10. $x + d = y$

$d = y - x$

$y + d = 3x + y$

$y + y - x = 3x + y$

$y = 4x$

$3x + y + d = x + 2y + 2$

$3x + 4x + 4x - x = x + 8x + 2$

$10x = 9x + 2$

$x = 2$

$y = 8$

e) 6

11. $x, \; x+y, \; x+2y, \; x+3y$

$x + x + 2y = 30$

$x + y = 15$

$x = 15 - y$

$4x + 6y = 82$

$2x + 3y = 41$

$2(15 - y) + 3y = 41$

$30 - 2y + 3y = 41$

$y = 11 \quad x = 4$

$x + y = 15$

$x + 3y = 37$

4th term is greater by 22

12. $a, \; 2, \; a+2, \; 2(a+2), \; 4(a+2), \; 8(a+2) \ldots$

$8(a+2) = 56$

$a + 2 = 7$

$a =$ e) 5

13. $309 = -300 + (n-1)3$

$309 = -300 + 3n - 3$

$612 = 3n$

$n = 204$

$S_n = \frac{204}{2}(-300 + 309)$

$S_n =$ d) 918

14. 7, 14, 21, 28 ... 294

+7

$294 = 7 + (n-1)7$

$294 = 7n$

$n = 42$

$S_n = \frac{42}{2}(7+294)$

$S_n = 21(301)$

$\boxed{S_n = 6321}$

15. $a_4 + a_6 = 1$

1 2 3 4 5 6 7 8 9

pair

$S_n = \frac{9}{2}(1)$

$\boxed{S_n = 4.5}$

17. A: $9, 9+d, 9+2d$

G: $9, 11+d, 29+2d$

$9x = 11+d$ $(11+d)x = 29+2d$

$d = 9x - 11$ $11x + dx = 29+2d$

$11x + (9x-11)x = 29 + 2(9x+11)$

$11x + 9x^2 - 11x = 29 + 18x - 22$

$9x^2 - 18x - 7 = 0$

$(3x+1)(3x-7) = 0$

$x = -\frac{1}{3}$ $x = \frac{7}{3}$

$9(-\frac{1}{3}) = 11+d$

$-3 = 11+d$

$d = -14$

$29 + 2d = 1$

$\boxed{= a) 1}$