a)

Write the nth term of the sequence which begins

$$10, 19, 32, 49, 70, ...$$

What is the quadratic part of the sequence?	$10, 19, 32, 49, 70, ...$ $+9 \quad +13 \quad +17 \quad +21$ $+4 \quad +4 \quad +4$ $4 \div 2 = 2$ $2n^2 = 2, 8, 18, 32, 50, ...$
What is the residual?	$10, 19, 32, 49, 70, ...$ $- 2, \ 8, \ 18, 32, 50, ...$ $8, 11, 14, 17, 20, ...$ $3n + 5$
What is the nth term of the sequence?	$2n^2 + 3n + 5$

b)

Write the nth term of the sequence which begins

$$6, 12, 20, 30, 42, ...$$

What is the quadratic part of the sequence?	$6, 12, 20, 30, 42, ...$ $+6 \quad +8 \quad +10 \quad +12$ $+2 \quad +2 \quad +2$ $2 \div 2 = 1$ $(1)n^2 = 1, 4, 9, 16, 25, ...$
What is the residual?	$6, 12, 20, 30, 42, ...$ $- 1, \ 4, \ 9, 16, 25, ...$ $5, \ 8, 11, 14, 17, ...$ $3n + 2$
What is the nth term of the sequence?	

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c)
Write the nth term of the sequence which begins
$$1, 15, 37, 67, 105, \dots$$

What is the quadratic part of the sequence?	$1, 15, 37, 67, 105, \dots$ $+14 \quad +22 \quad +30 \quad +38$ $+8 \quad +8 \quad +8$ $8 \div 2 = 4$ $4n^2 = 4, 16, 36, 64, 100, \dots$
What is the residual?	
What is the nth term of the sequence?	

d)
Write the nth term of the sequence which begins
$$9, 13, 21, 33, 49, \dots$$

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