SOLUTIONS => QUADRATIC SEQUENCES WORKSHEET #1

1a) 2, 6, 12, 20, 30, 42

D_1: 4, 6, 8, 10, 12 $\quad D_2 = 2$

D_2: 2, 2, 2, 2

b) 3, 5, 9, 15, 23, 33, 45

D_1: 2, 4, 6, 8, 10, 12 $\quad D_2 = 2$

D_2: 2, 2, 2, 2, 2

Feb 26-9:16 AM

c) 7, 30, 65, 112, 171, 242, 325

D_1: 23, 35, 47, 59, 71, 83 $\quad D_2 = 12$

D_2: 12, 12, 12, 12, 12

d) 1, 0, 3, 10, 21, 36, 55

D_1: -1, 3, 7, 11, 15, 19 $\quad D_2 = 4$

D_2: 4, 4, 4, 4, 4

Feb 26-9:17 AM

e) 1, 9, 27, 55, 93, 141, 199

D_1: 8, 18, 28, 38, 48, 58 $\quad D_2 = 10$

D_2: 10, 10, 10, 10, 10

2. a) $t_n = n^2 + 2n - 3$

n	t_n
1	$(1)^2+2(1)-3 = 0$
2	$(2)^2+2(2)-3 = 5$
3	$(3)^2+2(3)-3 = 12$
4	$(4)^2+2(4)-3 = 21$
5	$(5)^2+2(5)-3 = 32$

$\Rightarrow$

n	t_n
1	0
2	5
3	12
4	21
5	32

Feb 26-9:17 AM

b) $t_n = n^2 - 3$

n	t_n
1	$(1)^2-3 = -2$
2	$(2)^2-3 = 1$
3	$(3)^2-3 = 6$
4	$(4)^2-3 = 13$
5	$(5)^2-3 = 22$

$\Rightarrow$

n	t_n
1	-2
2	1
3	6
4	13
5	22

c) $t_n = 2n^2 - 3n + 4$

n	t_n
1	$2(1)^2-3(1)+4 = 3$
2	$2(2)^2-3(2)+4 = 6$
3	$2(3)^2-3(3)+4 = 13$
4	$2(4)^2-3(4)+4 = 24$
5	$2(5)^2-3(5)+4 = 39$

$\Rightarrow$

n	t_n
1	3
2	6
3	13
4	24
5	39

Feb 26-9:19 AM

d)

n	t_n
1	$3(1)^2+(1)-2 = 2$
2	$3(2)^2+(2)-2 = 12$
3	$3(3)^2+(3)-2 = 28$
4	$3(4)^2+(4)-2 = 50$
5	$3(5)^2+(5)-2 = 78$

$\Rightarrow$

n	t_n
1	2
2	12
3	28
4	50
5	78

3. From #2:

a) 0, 5, 12, 21, 32

D_1: 5, 7, 9, 11 $\quad D_2 = 2$

D_2: 2, 2, 2

Feb 26-9:19 AM

b) -2, 1, 6, 13, 22

D_1: 3, 5, 7, 9 $\quad D_2 = 2$

D_2: 2, 2, 2

c) 3, 6, 13, 24, 39

D_1: 3, 7, 11, 15 $\quad D_2 = 4$

D_2: 4, 4, 4

d) 2, 12, 28, 50, 78

D_1: 10, 16, 22, 28 $\quad D_2 = 6$

D_2: 6, 6, 6

Feb 26-9:20 AM