Exponential Equations, Sequences, & Multiply Binomials
Show all your work and reasoning. Use a pencil and highlight your answers.

1. Solve for x.

a) $5^{2x} = 125$

b) $\left(\dfrac{1}{8}\right)^{2x} = 32$

c) $8^{5x} - 3 = 61$

d) $3^{2x-1} = 81^5$

e) $\left(\dfrac{1}{4}\right)^{7x} = 64^{x+6}$

f) $\dfrac{1}{25^{-6x}} = 125^{2x+3}$

2. Given each table,
- Determine whether the function is linear, exponential, or quadratic, and explain how you know.
- Determine both the recursive and explicit formulas.

a)

x	f(x)
−1	84
0	68
1	52
2	36

Type of function & justification:

Explicit:

Recursive:

b)

x	f(x)
−2	2
−1	5
0	6
1	5

Type of function & justification:

Explicit:

Recursive:

c)

x	f(x)
−3	90
−2	40
−1	10
0	0

Type of function & justification:

Explicit:

Recursive:

3. Given the explicit formula $f(x) = 5x^2 + 2$, determine the recursive formula by making a table.

4. Given the recursive formula $f(-1) = 1$, $f(x) = f(x-1) + 6x - 3$, determine the explicit formula by making a table.

5. Multiply each of the following expressions.

a) $(x + 7)(x + 9)$

b) $(2x - 5)(3x + 7)$

c) $(a - 7)(a + 2)$

d) $(5d - 3)^2$

e) $(2h + 3)(2h - 3)$

f) $(b - 4)(b^2 - 7b + 8)$

6. On the third day of school I had 18 pieces of paper shoved to the bottom of my backpack. Each day after that, I shoved 11 more pieces of paper to the bottom of my backpack.

a) Write the recursive function.

b) Write the explicit function.

c) My backpack finally exploded into a giant mess which disrupted my science class and sent the substitute teacher running into the hall in tears. I had 733 pieces of paper at the bottom of my backpack. What day of school did this occur?