

Given the recursive equation, find the explicit equation.

Ex. 1: $f(x) = f(x-1) + 2$; $f(0) = -3$ $f(x) = mx + b$

$f(x) = 2x - 3$ $x=0 \rightarrow y = -3$ $m = \text{slope}$

Ex. 2: $f(x) = f(x-1) - 8$; $f(-3) = 4$

$f(x) = -8x - 20$

$y = mx + b$
 $4 = (-8)(-3) + b$
 $4 = 24 + b$
 $-24 \quad -24$

 $-20 = b$

Given the explicit equation, find the recursive equation.

Ex. 3: $f(x) = 4x + 9 \rightarrow y\text{-int, } x=0$

$f(x) = f(x-1) + 4$; $f(0) = 9$

Ex. 4: $f(x) = -4(x-2) + 3$

$-4x + 8 + 3$

$f(x) = -4x + 11$

$f(x) = f(x-1) - 4$;

$f(0) = 11$

Given the recursive equation, find the explicit equation.

Ex. 5: $f(x) = f(x-1) \cdot 4$; $f(1) = -6$

$$f(x) = \frac{-6}{y_1} (4)^{x - \frac{1}{x_2}}$$

(common Ratio)

Ex. 6: $f(x) = 6 \cdot f(x-1)$; $f(-4) = -2$

$$f(x) = \frac{-2}{y_1} (6)^{x + 4}$$

Given the explicit equation, find the recursive equation.

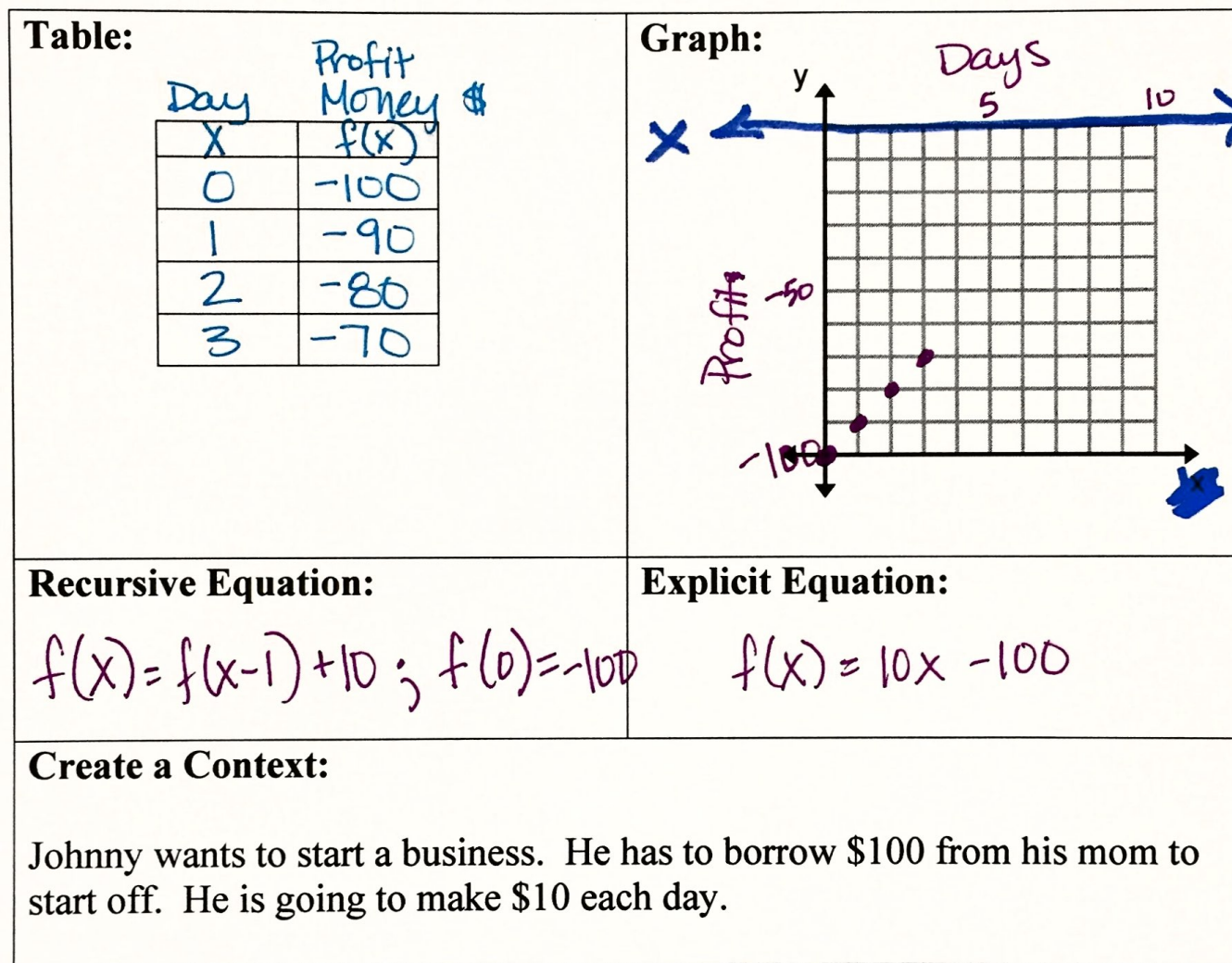
Ex. 7: $f(x) = -2 \cdot \left(\frac{1}{7}\right)^{x-1}$

$$f(x) = f(x-1) \cdot \frac{1}{7}; f(1) = -2$$

Ex. 8: $f(x) = 3(5)^{x+5}$

$$f(x) = f(x-1) \cdot 5; f(-5) = 3$$

Ex. 9:

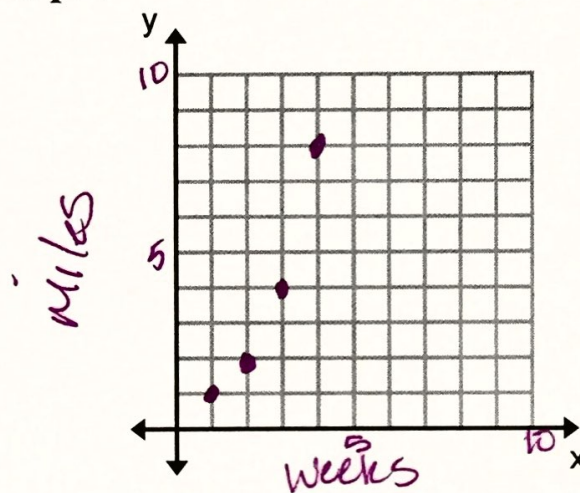


Ex. 10:

Table:

Weeks	Miles
x	$f(x)$
1	1
2	2
3	4
4	8

Graph:



Recursive Equation:

$$f(x) = f(x-1) \cdot 2; f(1) = 1$$

Explicit Equation:

$$f(x) = 1(2)^{x-1}$$

Create a Context:

Scott decides to add running to his exercise routine and runs a total of one mile his first week. He plans to double the number of miles he runs each week.