Problem 9.5

Task 1
The recurrence relation G(n) is as follows:

$$G(n) = \begin{cases} 1 & \text{if } n = 0 \\ F(n) + G(n-1) & \text{if } n > 1 \end{cases}$$

Task 2

Pf:
Basis: In the base case, n = 1,

$$\begin{aligned} G(1) &= 1 \\ &= 2 - 1 \\ &= F(3) - 1 \\ &= F(1+2) - 1 \end{aligned}$$

Step: Assume

$$\begin{aligned} G(n-1) &= F((n-1)+2) - 1 \\ &= F(n+1) - 1 \end{aligned}$$

Then

$$\begin{aligned} G(n) &= F(n) + G(n-1) \\ &= F(n) + F(n+1) - 1 \\ &= F(n+2) - 1 \end{aligned}$$

by the recurrence relation F(n)

Q.E.D.