

$$1. a_0 = 0, a_1 = 1$$

$$a_i = a_{i-1} + a_{i-2}, \text{ for } i \geq 2.$$

2. Extra credit

$$S(x) = x^8 + x^7 + 2x^6 + 3x^5 + 5x^4 + 8x^3 + 13x^2 + 21x + 34$$

$$r(x) = x^9 \quad \text{find } f(x)r(x) + c(x)s(x) = b(x) \cdot \deg b < \deg c$$

$$\begin{matrix} f(x) & c(x) & b(x) \end{matrix}$$

$$(1) \quad 1 \quad 0 \Rightarrow x^9$$

$$(2) \quad 0 \quad 1 \Rightarrow x^8 + x^7 + 2x^6 + 3x^5 + 5x^4 + 8x^3 + 13x^2 + 21x + 34$$

$$\begin{array}{r} 1-1 \\ 1100000000 \\ 112358132134 \\ \hline 1123581321340 \\ 112358132134 \\ \hline -1-2-3-5-8-13-34 \end{array}$$

$$(3) \quad x-1 \quad 1-0(x+1) \quad 0-1(x+1) \Rightarrow -x^9 - x^6 - 2x^5$$

$$= 1 \quad = -x+1 \Rightarrow -3x^4 - 5x^3 - 8x^2 - 13x + 34$$

$$\begin{array}{r} -10 \\ 112358132134 \\ 1123581334 \\ \hline 5534 \end{array}$$

$$(4) \quad -x \quad 0-1x(-x) \quad 1-(-x+1)-x$$

$$= x \quad = -x^2 + x + 1 \Rightarrow 55x + 34$$

$$\deg c < \deg b$$

$$\Rightarrow c(x) = -x^2 + x + 1$$

