$$2x^3 - 7x^2 + 5x - 14 \quad \text{for} \quad x = 4$$

9a.

	i	Product	Sum
(Initialization)	"0"	1	-14
	1	4	6
	2	16	-106
	3	64	22

Return 22

b. For a polynomial of degree n, there are

n * from calculation of product, &

n * from calculation of sum, plus

n + .

$$\boxed{C(n) = 3n}$$

If I had written this as a recurrence relation, I would have observed that

$$C(n) = C(n-1) + 3 \; ; \quad C(0) = 0 \, .$$

10 a. $-14 + x(5 + x(-7 + x(2)))$

	i	result	
(Initialization)	"0"	2	
	1	1	$*, +$
	2	9	$*, +$
	3	22	$*, +$

b. $C(n) = 2n$

c. 98

40. a. $\gcd(89, 55)$

$$89 = 1 \cdot 55 + 34 \qquad 1$$

$$55 = 1 \cdot 34 + 21 \qquad 2$$

$$34 = 1 \cdot 21 + 13 \qquad 3$$

$$21 = 1 \cdot 13 + 8 \qquad 4$$

$$13 = 1 \cdot 8 + 5 \qquad 5$$

$$8 = 1 \cdot 5 + 3 \qquad 6$$

$$5 = 1 \cdot 3 + 2 \qquad 7$$

$$3 = 1 \cdot 2 + 1 \qquad 8$$

$$2 = 2 \cdot 1 + 0 \qquad 9$$

$\gcd(89, 55) = 1$

$\boxed{\text{9 divisions}}$

b. $E(a) \leq 2 \log_2 a$ is Equation 1

$a = 89$

$$E(89) \leq 2 \log_2 89 \approx 12.95$$

$$\therefore \boxed{E(89) \leq 12}$$

c. $m < \log_{1.5}(89) - 1 \approx 10.07$

$\boxed{m \leq 10}$

d. Lamé says an upper bound on

gcd (89,55)

divisions is

$m \leq 5 \cdot 2 = 10$

decimal digits in b.