10. Look at the exercises for which there was no remainder when a polynomial was divided by a binomial. What relationship is there among the constant terms of the dividend, divisor, and quotient?

The product of the constant terms of the divisor and the quotient is equal to the constant term of the dividend. For example, in question 7a, the constant terms of the divisor and quotient are -3 and -15, and $(-3)(-15) = 45$, which is the constant term of the dividend.

11. **a)** Determine the quotient and remainder when $4x^3 + 5x^2 - 6x + 5$ is divided by each binomial.

i) $x + 1$

−1	4	5	−6	5
		−4	−1	7
	4	1	−7	12

Result: $4x^2 + x - 7$ R12

ii) $x - 1$

1	4	5	−6	5
		4	9	3
	4	9	3	8

Result: $4x^2 + 9x + 3$ R8

b) Use your answers to part a to determine the quotient and remainder when $4x^3 + 5x^2 - 6x + 5$ is divided by each binomial. Explain your strategy.

i) $-x + 1$

$-x + 1 = -(x - 1)$
When the polynomial is divided by $x - 1$, the quotient and remainder are $4x^2 + 9x + 3$ R8. So, when the polynomial is divided by $-x + 1$, the quotient and remainder will be: $-(4x^2 + 9x + 3)$ R8, or $-4x^2 - 9x - 3$ R8

ii) $-x - 1$

$-x - 1 = -(x + 1)$
When the polynomial is divided by $x + 1$, the quotient and remainder are $4x^2 + x - 7$ R12. So, when the polynomial is divided by $-x - 1$, the quotient and remainder will be: $-(4x^2 + x - 7)$ R12, or $-4x^2 - x + 7$ R12