The Missing Coefficient   Name: _____

In the following problems, the given functions are missing a coefficient. Your job is to determine those values
given the other information provided.

1. Consider the polynomial function $f(x) = x^4 - 4x^3 - 18x^2 + cx - 15$, where c is an unknown real number. If $(x + 3)$ is a factor of this polynomial, what is the value of c?

2. Consider the polynomial function

$$P(x) = x^4 - 3x^3 + ax^2 - 6x + 14,$$

where a is an unknown real number. If $(x - 2)$ is a factor of this polynomial, what is the value of a?

3. Consider the polynomial:
$$f(x) = x^4 + 8x^3 + 14x^2 - kx - 15$$

Where k is an unknown real number. If $(x + 1)$ is a factor of this polynomial, what is the value of k?

4. Consider the polynomial:
$$g(x) = x^5 + 2x^4 - 13x^3 - 26x^2 + kx + 72$$

Where k is an unknown real number. If $(x - 3)$ is a factor of this polynomial, what is the value of k?

5. Consider the polynomial:
$$h(x) = x^3 + kx^2 + 20x - 50$$

Where k is an unknown real number. If $(x + 5)$ is a factor of this polynomial, what is the value of k?