

Determine if the following are polynomial functions (yes or no). Then find the zeros (roots), if they exist, for all the functions given

	YES/NO	ZEROS (ROOTS)
1) $f(x) = x^3 - 2x^2 - 48x$	_____	_____
2) $g(x) = \frac{x^2 - 1}{3}$	_____	_____
3) $h(x) = 3x^{-2} + 1$	_____	_____
4) $k(x) = \frac{2}{3}x - 14$	_____	_____
5) $f(x) = \frac{x^2 + 7x + 6}{x^2 - 1}$	_____	_____
6) $g(x) = -11$	_____	_____

Use the functions $f(x) = 3x^2 - x + 15$ to find the following values.

7) $f(-6) =$ _____

8) $f(-2i) =$ _____

Use the functions $g(x) = x^2(x - 5) - 2$ to find the following values.

9) $g(-2\sqrt{3}) =$ _____

10) $g(2i + 1) =$ _____

Use synthetic substitution to find the following values.

$$f(x) = x^3 - 3x^2 - 8x + 21$$

$$g(x) = 4x^4 + x^2 - 7x - 11$$

11) $f(-2) = \underline{\hspace{2cm}}$

13) $g(-1) = \underline{\hspace{2cm}}$

12) $f(5) = \underline{\hspace{2cm}}$

14) $g(1/2) = \underline{\hspace{2cm}}$

Divide the polynomials using whatever method seems appropriate.

15) $(3x^3 + 4x^2 - 76x + 50) \div (x - 4)$

16) $(2x^4 - 7x^2 - 14) \div (2x^2 + 1)$

Determine if the second polynomial is a factor of the first one given (yes or no). Must show proof!

17) $x^3 + x^2 - 5x - 9$; $x - 2$

18) $x^4 - 5x^3 + 30x - 36$; $x - 3$

Given a polynomial and one or more of its zeros, find the remaining zeros (roots).

19) $x^3 + 10x^2 + 26x + 8$; zero = -4

20) $2x^5 + x^4 - 4x^2 - 32x$; roots = ± 2