

Describe the end behavior of the graph of each polynomial function using limits. Explain your reasoning using the leading term test

21 $f(x) = -4x^4 + 7x^3 - 8x^2 + 12x - 6$

24 $f(x) = x^3(x-5)(x+7)$

State the number of possible real zeros and turning points of each function. Then determine all of the real zeros by factoring.

25 $f(x) = x^3 - 7x^2 + 12x$

26 $f(x) = x^5 + 8x^4 - 20x^3$

28 $f(x) = x^4 - 10x^2 + 9$

For $f(x)$, a) apply the leading term test, b) find the zeros and state the multiplicity of each, and c) sketch the function.

30 $f(x) = (x-5)^2(x-1)^2$

Divide using long division

32 $(-3x^3 + 5x^2 - 22x + 5) \div (x^2 + 4)$

Divide using Synthetic Division

35 $(x^4 - x^3 + 7x^2 - 9x - 18) \div (x - 2)$

List all possible rational zeros of the function. Then determine which, if any, are zeros.

40 $f(x) = x^3 - x^2 - x + 1$

Determine if the binomials are factors of the given function. If they are, use them factor the function.

38 $f(x) = 2x^4 - 9x^3 + 2x^2 + 9x - 4;$
 $(x-1), (x+1)$

42 $f(x) = x^4 + 5x^2 + 4$

45 Solve: $6x^3 - 23x^2 + 26x - 8 = 0$

43 $f(x) = 3x^4 - 14x^3 - 2x^2 + 31x + 10$

Find the Domain of each function and the equations of the vertical or horizontal asymptotes, if any.

51 $f(x) = \frac{x^2}{x^2 - 25}$

52 $f(x) = \frac{x(x-3)}{(x-5)^2(x+3)^2}$

For each function, determine any asymptotes and intercepts (if any). Then graph the function and state the domain.

55 $f(x) = \frac{(x-2)}{(x+4)}$

56 $f(x) = \frac{(x+3)(x-4)}{(x+5)(x-6)}$

57 $f(x) = \frac{x(x+7)}{(x+6)(x-3)}$

58 $f(x) = \frac{x+2}{x^2-1}$

59 $f(x) = \frac{x^2-16}{x^3-6x^2+5x}$

