

SYNTHETIC SUBSTITUTION Use synthetic substitution to evaluate the polynomial function for the given value of x .

37. $f(x) = 5x^3 + 4x^2 + 8x + 1, x = 2$

38. $f(x) = -3x^3 + 7x^2 - 4x + 8, x = 3$

39. $f(x) = x^3 + 3x^2 + 6x - 11, x = -5$

40. $f(x) = x^3 - x^2 + 12x + 15, x = -1$

41. $f(x) = -4x^3 + 3x - 5, x = 2$

42. $f(x) = -x^4 + x^3 - x + 1, x = -3$

43. $f(x) = 2x^4 + x^3 - 3x^2 + 5x, x = -1$

44. $f(x) = 3x^5 - 2x^2 + x, x = 2$

45. $f(x) = 2x^3 - x^2 + 6x, x = 5$

46. $f(x) = -x^4 + 8x^3 + 13x - 4, x = -2$

END BEHAVIOR PATTERNS Graph each polynomial function in the table. Then copy and complete the table to describe the end behavior of the graph of each function.

47.

Function	As $x \rightarrow -\infty$	As $x \rightarrow +\infty$
$f(x) = -5x^3$?	?
$f(x) = -x^3 + 1$?	?
$f(x) = 2x - 3x^3$?	?
$f(x) = 2x^2 - x^3$?	?

48.

Function	As $x \rightarrow -\infty$	As $x \rightarrow +\infty$
$f(x) = x^4 + 3x^3$?	?
$f(x) = x^4 + 2$?	?
$f(x) = x^4 - 2x - 1$?	?
$f(x) = 3x^4 - 5x^2$?	?

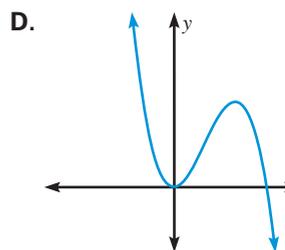
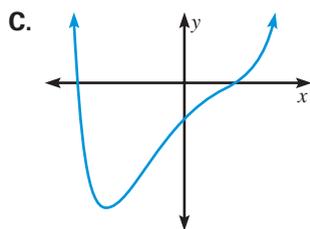
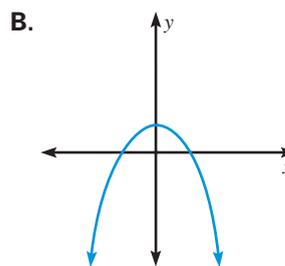
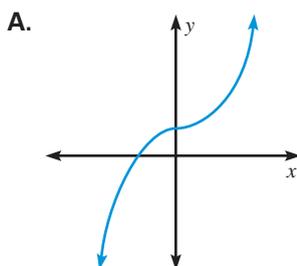
MATCHING Use what you know about end behavior to match the polynomial function with its graph.

49. $f(x) = 4x^6 - 3x^2 + 5x - 2$

50. $f(x) = -2x^3 + 5x^2$

51. $f(x) = -x^4 + 1$

52. $f(x) = 6x^3 + 1$



DESCRIBING END BEHAVIOR Describe the end behavior of the graph of the polynomial function by completing these statements: $f(x) \rightarrow ?$ as $x \rightarrow -\infty$ and $f(x) \rightarrow ?$ as $x \rightarrow +\infty$.

53. $f(x) = -5x^4$

54. $f(x) = -x^2 + 1$

55. $f(x) = 2x$

56. $f(x) = -10x^3$

57. $f(x) = -x^6 + 2x^3 - x$

58. $f(x) = x^5 + 2x^2$

59. $f(x) = -3x^5 - 4x^2 + 3$

60. $f(x) = x^7 - 3x^3 + 2x$

61. $f(x) = 3x^6 - x - 4$

62. $f(x) = 3x^8 - 4x^3$

63. $f(x) = -6x^3 + 10x$

64. $f(x) = x^4 - 5x^3 + x - 1$