

For each polynomial, identify the degree, the leading coefficient and the end behavior.

1. $a(x) = 4x^3 - 8x^6 + x^2$

2. $b(x) = 3x^4 - 4x - 6$

3. $c(x) = -x(x+3)(x-1)$

4. $d(x) = (3x+2)^3(x-7)^2$

5. $f(x) = 10x^2 - 5x^3 + x^8$

For the following equations find the zeros, their multiplicity and the maximum number of turning points.

6. $h(x) = (x+6)^2(x+4)(x-2)^3$

7. $g(x) = x^2(2x+1)^2(x+4)(x-7)$

Sketch a graph of each polynomial.

8. $g(x) = x^3(x-3)^2(x+4)(x-7)$

9. $h(x) = -2x(x-6)^3(x+4)^3$

10. $j(x) = 5(x+2)^2(x-8)(x-3)$

11. $n(x) = (x-5)^3(x+3)^6$

12. $m(x) = -3x(x-4)^2(x+2)^3(x-8)$

13. $k(x) = 6(2x+1)^5(x-9)^4(2x-7)$

14. Find an equation of a function with roots $x = 3$, $x = -2$ and $x = 5$

15. On the same set of axes sketch a graph of $y = x^3$ and $y = x^3 + 2$

16. On the same set of axes sketch a graph of $y = x^4$ and $y = x^4 - 5$

