

PROBLEM SET 6-1 AND 6-2
(Polynomial Functions)

Simplify and classify each result by number of terms.

1. $(7x + 9x^2 - 8x + 11) - (5x^3 - 13x - 16)$
2. $(30x^3 - 49x^2 + 7x) + (50x^3 - 75 - 60x^2)$
3. $(3a^2 - ab - 7) + (5a^2 + ab + 8) - (-2a^2 + 3ab - 9)$

Find each product and classify the result by the number of terms.

4. $x(2x)(4x + 1)$
5. $b(b - 3)^2$
6. $(x^2 + 1)^2$
7. $(x - 2)^3$

Write each polynomial in factored form.

8. $x^3 - 36x$
9. $x^3 + 8x^2 + 16x$
10. $3x^3 - 27x^2 + 24x$
11. $\frac{1}{2}x^3 - \frac{1}{8}x$

Write a polynomial in standard form with the given zeros.

12. $x = 5, 6, 7$
13. $x = -2, 0, 1$

Find the zeros of each function. State the multiplicity of multiple zeros.

14. $f(x) = (x + 3)^3$
15. $f(x) = (x - 2)^2(x - 1)$
16. $g(x) = (2x + 3)(x - 1)^2$
17. $h(x) = x^4 + 2x^3 + x^2$