Chapter 3 Test Review

Name _____

Block _____ Date _____

Identify the degree of each monomial.

1) $3xy^3$ 2) $-a^3b^2c^5$ 3) 8 4) xyz

Rewrite each polynomial in standard form. Then identify the leading coefficient, degree, and number of terms. Name the polynomial.

5) $4b^4 - 3b^3 - 8b^2 + 9b^5 + 4b$

Standard Form:

Degree:

Leading Coefficient:

Terms:

Name:

6) $-2x - 3 + 10x^3$

Standard Form:

Degree:

Leading Coefficient:

Terms:

Name:

Add or subtract each polynomial and write in standard form.

7) $f(p) + g(p)$
$f(p) = 3p^2 - 5p + 7 + 8p^3$
$g(p) = 6p + 8p^2 + 7p^3 - 8$

8) $f(x) - g(x)$
$f(x) = 2 + 4x^2 + 8x - 8x^4$
$g(x) = x^4 + 6 + x^2 + 8x$

Find each product.

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

10) $(4n - 1)(3n^2 - 3n - 4)$

11) $(4x - 3)^3$

12) $(x + 1)^4$

Divide using Synthetic Division.

13) $(10x^5 + 78x^4 + 63x^3 + 42x^2 - 42x + 54) \div (x + 7)$ 14) $(n^5 - 2n^4 - 8n + 25) \div (n - 2)$

Determine whether the given binomial is a factor of the polynomial P(x).

15) $(p^3 - 9p^2) \div (p - 9)$ 16) $(n^5 - 10n^4 - 3n^3 + 30n^2 + 8) \div (n - 10)$

Use synthetic substitution to evaluate the polynomial for the given value.

17) $P(n) = n^3 - 4n^2 - 12$ for n = 4   18) $P(x) = x^6 + 9x^5 + 17x^4 - 9x^3 + 11x^2 - 3x + 14$
                                                              for x = -4

Factor each expression. Find all of the zeros and state their multiplicity.

19) $x^4 + 2x^2 - 24 = 0$ 20) $4x^3 + x^2 - 16x - 4 = 0$ 21) $2x^4 - 13x^3 - 24x^2 = 0$

Polynomial End Behavior

	Odd Degree	Even Degree
Leading Coefficient a > 0 (Positive)	As x → +∞ P(x) → +∞ As x → −∞ P(x) → −∞ +∞ / −∞ / +∞ / −∞	As x → −∞ P(x) → +∞ As x → +∞ P(x) → +∞ +∞ / −∞ / +∞ / −∞
Leading Coefficient a < 0 (Negative)	As x → −∞ P(x) → +∞ As x → +∞ P(x) → −∞ +∞ / −∞ / +∞ / −∞	As x → −∞ P(x) → −∞ As x → +∞ P(x) → −∞ +∞ / −∞ / +∞ / −∞
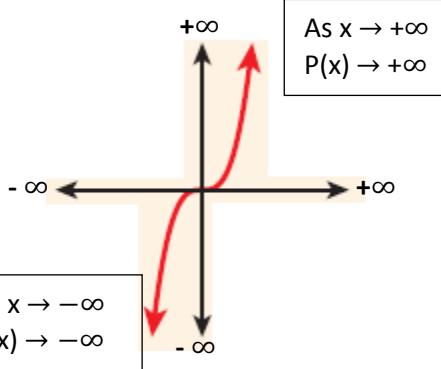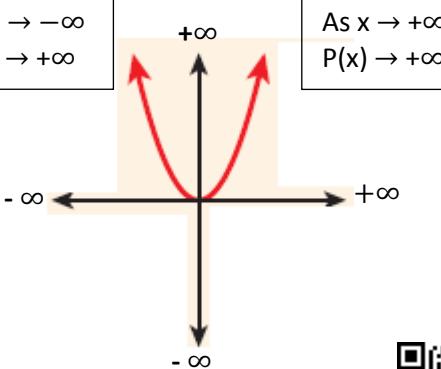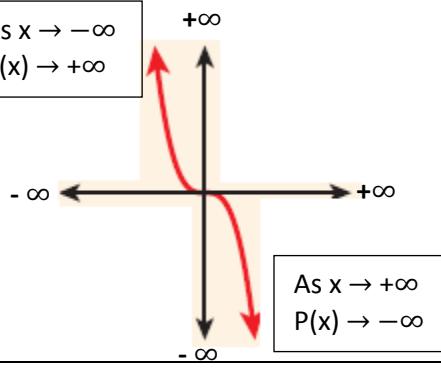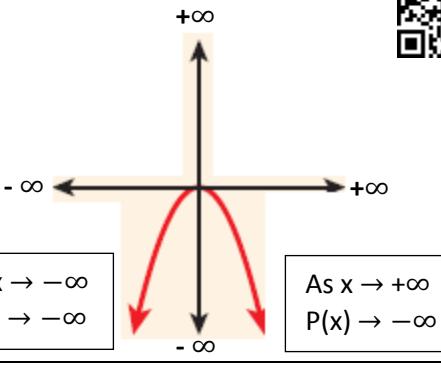
Complete the table to identify the leading coefficient, degree, and end behavior of each polynomial function.

Polynomial	Leading Coefficient	Degree	End behavior
22) $P(x) = x^2 + 3x + 6$			
23) $P(x) = -3x^3 + 2x - 5$			

Identify whether the function graphed has an odd or even degree and a positive or negative leading coefficient.

24)
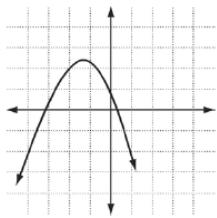
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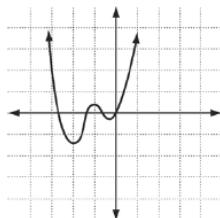
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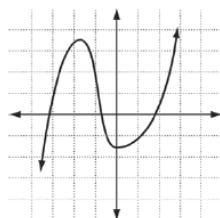
Factor and graph each function.

27) $P(x) = x^3 - 5x^2 - 4x + 20$
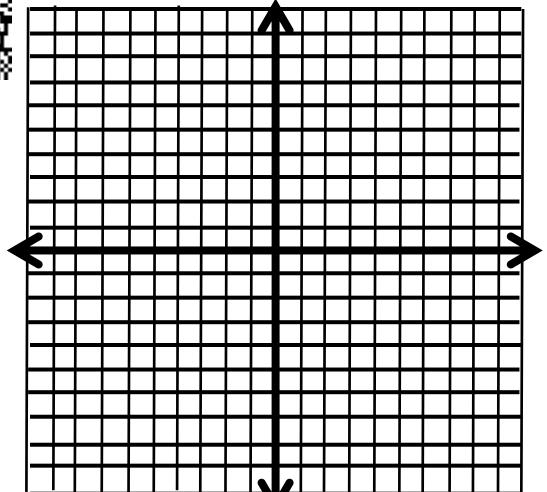
28) $P(x) = x^3 + 3x^2 - 10x$
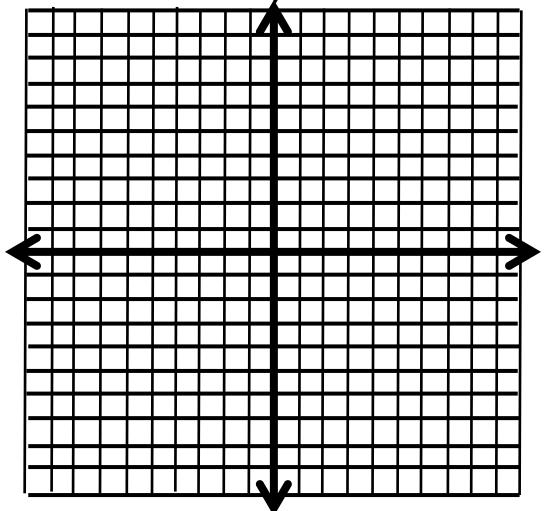
Find the local maximum and minimum of each function.

29) $P(x) = -x^3 - 11x^2 - 35x - 31$

Minimum = _____

Maximum = _____

30) $P(x) = x^4 + x^3 - 4x^2 + 4$

Minimum = _____

Maximum = _____

Find the simplest polynomial function with the given roots.

31) 0, 2, -5

32) -11, 7, 4