

**5.REV.3 ~ ZEROS OF POLYNOMIAL FUNCTIONS**

Factor the polynomial function.

1.  $p(x) = 3x^3 - 3x$

2.  $o(x) = 6x^2 - 18x - 60$

3.  $L(x) = x^3 + 2x^2 - 9x - 18$

4.  $y(x) = 8x^3 + 125$

5.  $n(x) = 3x^4 - 2x^2 - 5$

6.  $O(x) = 9x^2 + 5x - 4$

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

8.  $I(x) = 81x^4 - 1$

9.  $a(x) = 7x^4 + 34x^2 - 5$

10.  $l(x) = 50x^3 + 20x^2 + 2x$

Problems 11 & 12: First use synthetic division to write the polynomial in its factored form. Then find the zeros. Use the Quadratic Formula, if necessary, and round to 2 decimal places.

11.  $f(x) = 2x^3 + x^2 - 13x + 6$ ; 2 is a zero

12.  $f(x) = 2x^3 - 7x^2 - 12x + 20$ ; -2 is a zero

Problems 13 – 16: Analyze each polynomial function for its long-run and short-run behavior. Use the appropriate method: factoring (if necessary) and the Zero Product Property, the Square Root Property, or the Quadratic Formula, to find the  $x$ -intercepts/zeros of the polynomial function. *If necessary, round to 2 decimal places.*

13.  $f(x) = -7x^3 + 16x^2 - 4x$

DEGREE: \_\_\_\_\_  $\lim_{x \rightarrow -\infty} f(x) =$  \_\_\_\_\_

LEADING COEFFICIENT: \_\_\_\_\_  $\lim_{x \rightarrow \infty} f(x) =$  \_\_\_\_\_

CONSTANT: \_\_\_\_\_

FIRST WRITE THE FUNCTION IN INTERCEPT/FACTORED FORM AND THEN FIND THE ZEROS.

14.  $f(x) = 3x^3 + x^2 - 48x - 16$

DEGREE: \_\_\_\_\_  $\lim_{x \rightarrow -\infty} f(x) =$  \_\_\_\_\_

LEADING COEFFICIENT: \_\_\_\_\_  $\lim_{x \rightarrow \infty} f(x) =$  \_\_\_\_\_

CONSTANT: \_\_\_\_\_

FIRST WRITE THE FUNCTION IN INTERCEPT/FACTORED FORM AND THEN FIND THE ZEROS.

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

DEGREE: \_\_\_\_\_  $\lim_{x \rightarrow -\infty} f(x) =$  \_\_\_\_\_

LEADING COEFFICIENT: \_\_\_\_\_  $\lim_{x \rightarrow \infty} f(x) =$  \_\_\_\_\_

CONSTANT: \_\_\_\_\_

FIRST WRITE THE FUNCTION IN INTERCEPT/FACTORED FORM AND THEN FIND THE ZEROS.

16.  $f(x) = (4x^2 - 5)(x^2 - 2x - 5)$

DEGREE: \_\_\_\_\_  $\lim_{x \rightarrow -\infty} f(x) =$  \_\_\_\_\_

LEADING COEFFICIENT: \_\_\_\_\_  $\lim_{x \rightarrow \infty} f(x) =$  \_\_\_\_\_

CONSTANT: \_\_\_\_\_

USE THE APPROPRIATE METHOD(S) TO FIND THE ZEROS.