Secondary III H
8-1 HW

Name: _____

Zeros of a Polynomial

Determine whether the given binomial is a factor of the polynomial *p*(*x*) . If so, find the remaining factors of *p*(*x*).

12. $p(x) = x^3 + 2x^2 - x - 2,\ (x+2)$

13. $p(x) = 2x^4 + 6x^3 - 5x - 10,\ (x+2)$

14. $p(x) = x^3 - 22x^2 + 157x - 360,\ (x-8)$

15. $p(x) = 4x^3 - 12x^2 + 2x - 5,\ (x-3)$

Find all the zeros of the following polynomials GRAPHICALLY (using your calculator)

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

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

Find all the zeros of the following polynomials ALGEBRAICALLY

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

2. $f(x) = 2x^3 - x^2 - 13x - 6$

3. $g(x) = x^3 - 9x^2 + 23x - 15$

4. $h(x) = 6x^3 - 7x^2 - 9x - 2$

5. $g(x) = x^4 - 6x^3 + 11x^2 - 6x$

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

7. $f(x) = x^3 - 4x^2 - 11x + 2$

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

17. Identify the zeroes of $f(x) = (x + 3)(x - 4)(x - 3)$, write the function in standard form, and state how the zeros are related to the standard form.

19. **Explain the Error** Sabrina was told to find the zeros of the polynomial function $h(x) = x(x - 4)(x + 2)$. She stated that the zeros of this polynomial are $x = 0$, $x = -4$, and $x = 2$. Explain her error.

Review

Perform the following operations

1. $\left(x^2 - 3x + 7\right) + \left(3x^2 + 5x - 3\right)$

2. $\left(-3x^2 - 5\right) - \left(x^2 + 7x + 12\right)$

3. $\left(5x^3 - 1\right)^2$