

Name: _____ Date: _____ Unit 6 Class Work

Forms and Zeros of Polynomial Functions Class Work

Objective: You will be able to rewrite polynomial expressions given their zeros and/or to determine their zeros, as well as the multiplicity of each.

* Factor each polynomial completely to determine its zeros, as well as the multiplicity of each.

1. $2x^2 + 7x - 14$ $a \cdot c = -28$
 $7 \cdot -4$
 Quadratic
 2 roots
 $2x^2 + 7x - 4x - 14$
 $x(2x+7) - 2(x+7)$
 common factor
 $(2x+7)(x-2)$
 $2x+7=0$ $x-2=0$
 $x = -\frac{7}{2}$ $x = 2$
 (M.I) (M.I)

2. $2x^4 - 162$
 Quartic
 4 roots
 $2(x^4 - 81)$
 $2(x^2+9)(x^2-9)$
 $2(x-3i)(x+3i)(x+3)(x-3)$
 $x-3i=0$
 $x=3i$ $x=-3i$ $x=-3$ $x=3$
 all M.I

3. $x^4(x^2+14)^3 - 196(x^2+14)^3$
 common factor
 $(x^2+14)^3(x^4-196)$
 $(x^2+14)^3(x^2+14)(x^2-14)$
 $(x^2+14)^4(x^2-14)$
 $x^2+14=0$ $x^2-14=0$
 $x^2=-14$ $x^2=14$
 $x = i\sqrt{14}$ (M.I) $x = \sqrt{14}$ (M.I)
 $x = -i\sqrt{14}$ (M.I) $x = -\sqrt{14}$ (M.I)

4. $x^2(x - 8) - 64(x - 8)$

5. $2x^3 - 18x$

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6. $3x^5 - 27x^4 + 60x^3$

* Factor each polynomial completely to determine its zeros, as well as the multiplicity of each.

1. $2x^2 + 3x - 14$

2. $2x^4 - 162$

3. $x^4(x^2 + 14)^3 - 196(x^2 + 14)^3$

*4. $x^2(x - 8) - 64(x - 8)$

*5. $2x^3 - 18x$

*6. $3x^5 - 27x^4 + 60x^3$

$$3x^3(x^2 - 9x + 20)$$

$$3x^3(x-5)(x-4)$$

$$x=0$$

(M.3)

$$x=5 ; x=4$$

(M.1) (M.1)