Math 3: 4.6 Review

**For each function, state the information requested.**

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| Domain:  Range: | Int. of Increase:  Int. of Decrease: | Relative Min:  Relative Max: |
| x-intercept(s):  y-Intercept: | Int. of Increase:  Int. of Decrease: | Relative Min:  Relative Max: |

**Describe the end behavior of the graph of the polynomial function by completing the statements.**

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|  | as *x* → − ∞, *f(x)* → \_\_\_\_\_\_  as *x → +* ∞, *f(x)* → \_\_\_\_\_\_ |
|  | as *x* → − ∞, *f(x)* → \_\_\_\_\_\_  as *x → +* ∞, *f(x)* → \_\_\_\_\_\_ |
|  | as *x* → − ∞, *f(x)* → \_\_\_\_\_\_  as *x → +* ∞, *f(x)* → \_\_\_\_\_\_ |

**Based on the end behavior, is the degree of the function even or odd? Is the leading coefficient positive or negative?**

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| Degree: even / odd  Leading Coeff: positive / negative | Degree: even / odd  Leading Coeff: positive / negative |
| Degree: even / odd  Leading Coeff: positive / negative | Degree: even / odd  Leading Coeff: positive / negative |

**Write an equation for the cubic function in standard form.**

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|  | 1. x-intercepts: -6, 3, -3; y-intercept: -27 |
| 1. zeros of the function: 3 (multiplicity 2), 9, and -5   You may give this equation in intercept form. | 1. zeros 3 and 7 (the zero 7 has multiplicity 2) |

**Factor each polynomial.**

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**Solve for x.**

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**The graph a polynomial function is shown. Match each function transformation to its corresponding graph.**

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**State all zeros of the function (including multiplicities).**

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**State the number of complex roots and the number of real roots for each function shown.**

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| 1. 4th degree polynomial:   # Complex Roots: \_\_\_\_  # Real Roots: \_\_\_\_  # Non-real Roots: \_\_\_\_ | 1. 3rd degree polynomial:     # Complex Roots: \_\_\_\_  # Real Roots: \_\_\_\_  # Non-real Roots: \_\_\_\_ | 1. 5th degree polynomial:     # Complex Roots: \_\_\_\_  # Real Roots: \_\_\_\_  # Non-real Roots: \_\_\_\_ | 1. 9th degree polynomial:     # Complex Roots: \_\_\_\_  # Real Roots: \_\_\_\_  # Non-real Roots: \_\_\_\_ |
| 1. 4th degree polynomial:     # Complex Roots: \_\_\_\_  # Real Roots: \_\_\_\_  # Non-real Roots: \_\_\_\_ | 1. 3rd degree polynomial:     # Complex Roots: \_\_\_\_  # Real Roots: \_\_\_\_  # Non-real Roots: \_\_\_\_ | 1. 6th degree polynomial:     # Complex Roots: \_\_\_\_  # Real Roots: \_\_\_\_  # Non-real Roots: \_\_\_\_ | 1. 7th degree polynomial:   # Complex Roots: \_\_\_\_  # Real Roots: \_\_\_\_  # Non-real Roots: \_\_\_\_ |

**Graph Each Function.**

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| **Answers**: 1) D: R: ; 2) Inc: , Dec: ; 3) Min: (-1, -2), Max: (3,1); 4) x-int: (-3,0),(1,0),(4,0), y-int: (0,1); 5) Inc: ,  Dec: ; 6) Min: (-5,4),(1,-2), Max: (-3,5); 7) ; 8) ; 9) ; 10) even pos; 11) odd neg; 12) odd pos; 13) even neg;  14) ; 15) ; 16) ; 17) ; 18) ; 19) ; 20) ; 21) ; 22) ; 23) ; 24) ; 25) (; 26) ; 27) ; 28) ; 29) ; 30) ; 31) ; 32) top row: c, b, d;  bottom row: g, e, a, f; 33) ; 34) ; 35) ; 36) 4, 4, 0; 37) 3, 1, 2; 38) 5, 1, 4; 39) 9, 5, 4; 40) 4, 4, 0; 41) 3, 3, 0; 42) 6, 4, 2; 43) 7, 5, 2; 44-49 (see online) |  |  |