Name: _____ Period: _____ Date: _____

Practice Worksheet: Fundamental Theorem of Algebra & Writing Polynomial Equations

1. According to the Fundamental Theorem of Algebra, a polynomial has the same number of

   _____ _____ as its degree.

2. If $x = 3 + 2i$ is a zero of a polynomial graph, then _____ must also be a zero since

   imaginary zeros always come in _____ _____.

3. If the graph of an even degree polynomial does not cross the x-axis, then it has only

   _____ zeros.

4. $f(x) = x(x + 3)^3(x - 2)$ is a degree _____ polynomial with a _____ leading coefficient.

   The left end of the graph points _____, and the right end of the graph points _____. It has three real

   zeros at x =_____, x = _____, and x = ____ with _____ three.

5. $f(x) = (x - 1)^2(x - 6)^3(x + 4)$ is a degree _____ polynomial with a _____ leading

   coefficient. The graph will _____ at the zero of x = _____, _____ at the zero of x = _____,

   and _____ at the zero of x = _____.

6. A polynomial with a real zero with multiplicity four and two imaginary zeros must be a degree

   _____ polynomial.

Write a factored form polynomial of least degree that has the real zeros shown in the graph.
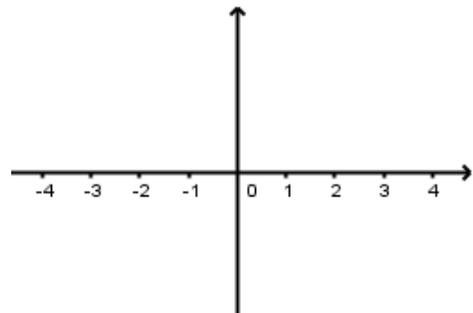
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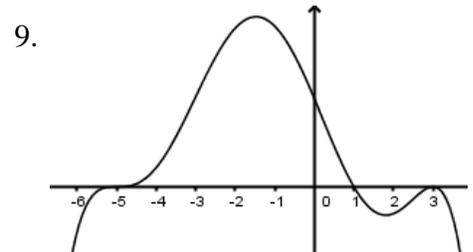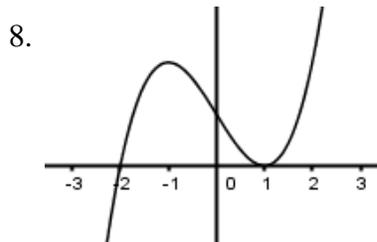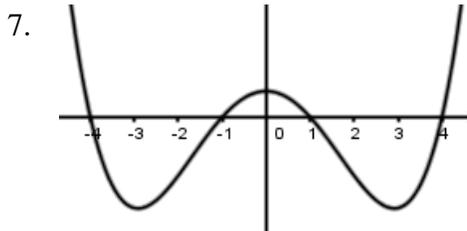
WITHOUT technology, sketch the graph of each polynomial function using the information provided.

10. A polynomial with a negative leading
    coefficient and zeros of x = -2 (multiplicity 2)
    and x = 1.
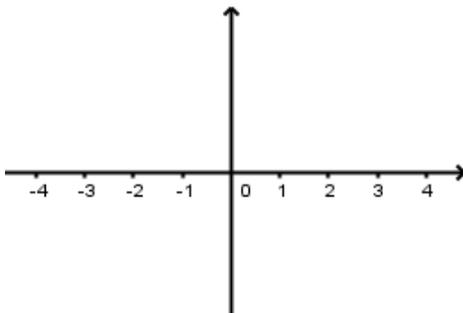
11. A polynomial with a positive leading
    coefficient and zeros of x = -2 (multiplicity 3),
    x = 0, and x = 3 (multiplicity 2).

Write a __STANDARD FORM__ polynomial function of least degree that has rational coefficients, a leading coefficient of 1, and the given zeros. #18-19 are extra credit.

12. $-7, -4$	13. $1, 2, 5$
14. $-5, 0, \pm 2i$	15. $0, \pm\sqrt{3}$
16. $3, 2$ (with multiplicity 2)	17. $3+2i, 3-2i$
18. $-3, 1$ (__both__ with multiplicity 2)	19. $8, 2 \pm i$