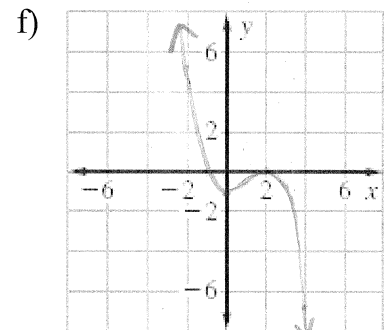
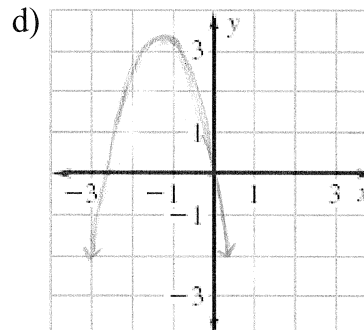
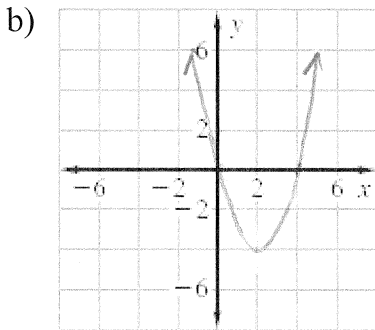
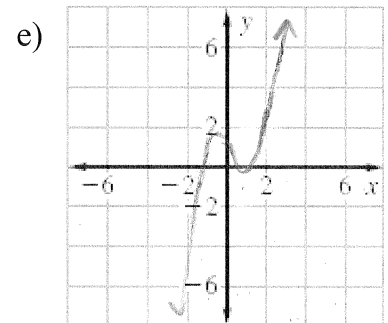
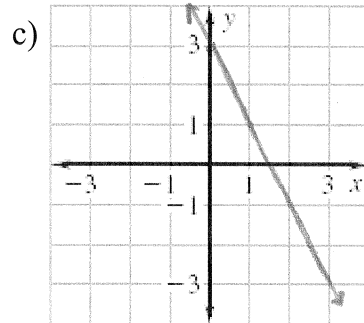
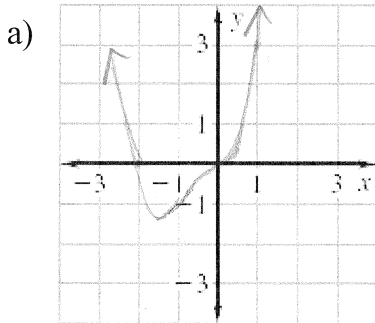


POLYNOMIALS OF HIGHER DEGREE

1-6: Match the polynomial function with its graph. [The graphs are labeled (a) through (f).]



1.  $f(x) = -2x + 3$

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

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

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

4.  $f(x) = 2x^3 - 3x + 1$

6.  $f(x) = -\frac{1}{3}x^3 + x^2 - \frac{4}{3}$

7 - 9 : Find all the real zeros of the polynomial function. (Factor)

7.  $f(x) = x^2 - 25$

8.  $h(t) = t^2 - 6t + 9$

9.  $f(t) = t^3 - 4t^2 + 4t$

10 - 12 Find a polynomial function that has the given zeros. (There are many correct answers)

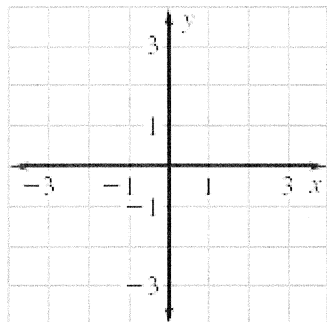
10. 0, 4

11. 0, -2, -3

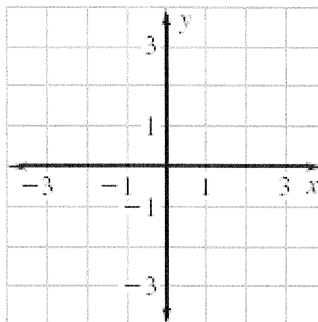
12. 4, -3, 3, 0

**13 – 15 Sketch a polynomial function with the given zeros, multiplicities, degree, and the sign of the leading coefficient. (There are many correct answers.)**

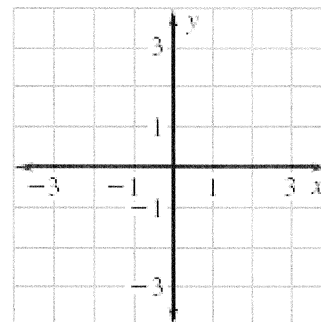
13. Zero: -2, multiplicity: 2  
 Zero: -1, multiplicity: 1  
 Degree: 3  
 Leading Coefficient:  
 positive



14. Zero: -4, multiplicity: 2  
 Zero: 3, multiplicity: 2  
 Degree: 4  
 Leading Coefficient:  
 positive



15. Zero: -1, multiplicity: 2  
 Zero: -2, multiplicity: 1  
 Degree: 3  
 Leading Coefficient:  
 negative



**16 – 18 True or False. Determine whether the statement is true or false. JUSTIFY your answer.**

16. It is possible for a sixth-degree polynomial to have only one zero.

17. The graph of the function:  $f(x) = 2 + x - x^2 + x^3 - x^4 + x^5 - x^6 - x^7$  rises to the left and falls to the right.

18. The graph of the function  $f(x) = 2x(x - 1)^2(x + 3)^3$  crosses the x-axis at  $x = 1$ .

**19 – 20 let  $f(x) = 14x - 3$  and  $g(x) = 8x^2$**

19.  $(f + g)(x)$

20.  $(g - f)(x)$