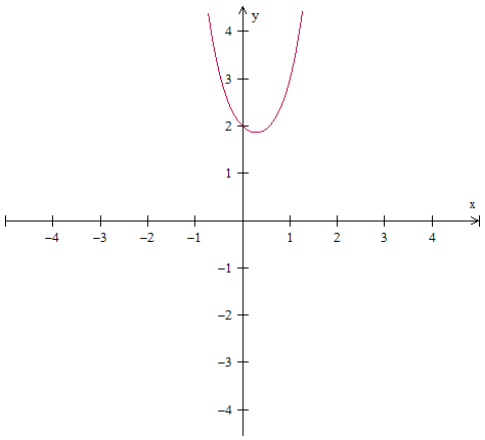
Homework: Polynomial Functions and Their Graphs

In Problems 1-5, determine which functions are polynomial functions. For those that are, identify the degree

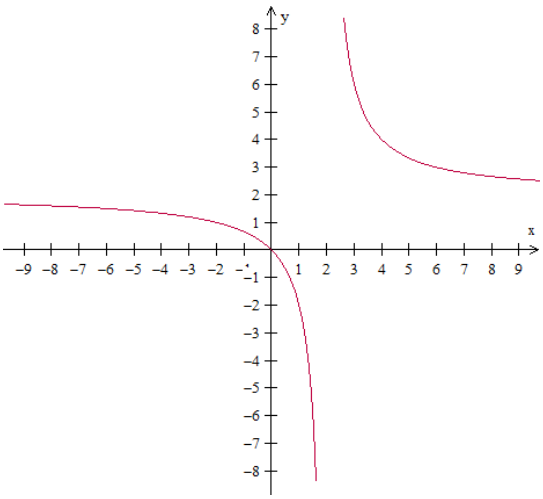
1. $f(x)=9x^2-3x+1$	2. $f(x)=x^5-\frac{2}{x}$
3. $f(x)=3x^5-7x+2$	4. $f(x)=4x+3x^{-2}$
5. $f(x)=8x^3+4x^2-5x+x^{\frac{1}{2}}$	

In Problems 6-7, identify which graphs are not those of polynomial functions

6.



7.



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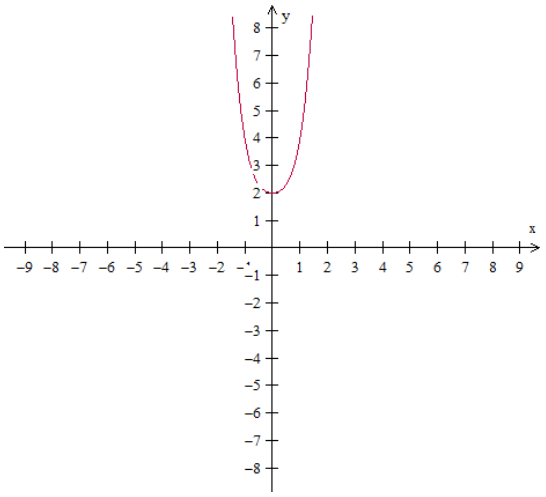
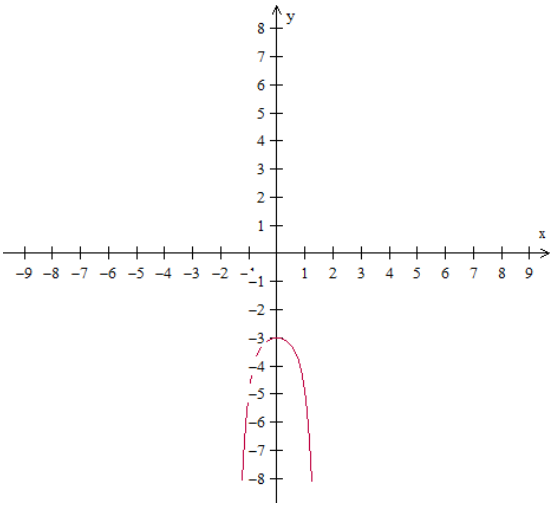
In Problems 8-9, Use the Leading Coefficient Test to determine the end behavior of the graph of the given polynomial function. Then use this end behavior to match the polynomial function with its graph

8. $f(x) = -x^3 + 7x + 2$	9. $f(x) = x^4 + x^2 + 2$

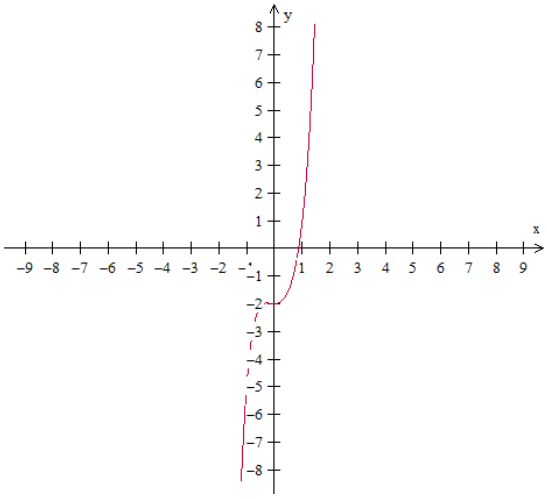
a.



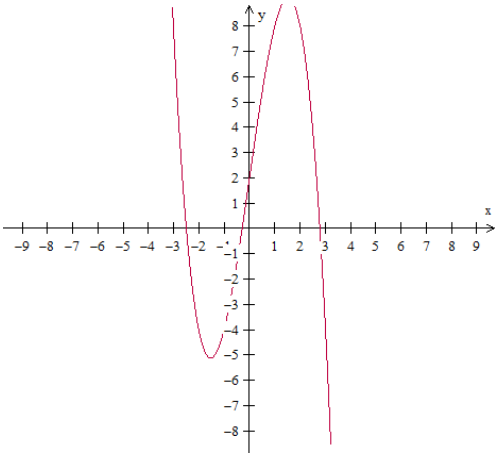
b.



c.



d.



In Problems 10-12, use the Leading Coefficient Test to determine the end behavior of the graph of the polynomial function

10. $f(x) = 2x^5 - 7x^2 + 3x - 2$	11. $f(x) = -3x^4 - x^3 + x^2 - 2$
12. $f(x) = x^4 + 3x - 1$	

In Problems 13-16, find the zeros for each polynomial function and give the multiplicity for each zero. State whether the graph crosses the x-axis, or touches the x-axis and turns around, at each zero.

13. $f(x) = -2(x-3)(x+2)^2$	14. $f(x) = x(x+3)(x-2)^3$
15. $f(x) = x^4 + x^3 - 6x^2$	16. $f(x) = x^3 + 3x^2 - 4x - 12$