

Practice Test 5
Graphing Polynomials/Rational Expressions

Classify each polynomial by its degree and number of terms. For example, you would classify the polynomial $3x^2 - 5x + 2.7$ as a *quadratic trinomial*.

1. 5

2. $1 + 13x^3$

3. $-x^2$

4. $x^4 - x^2 + 3x^3$

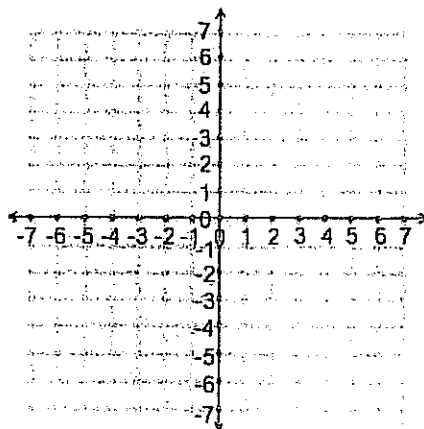
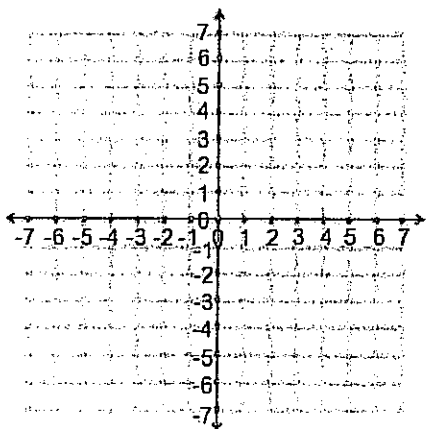
5. $\frac{1}{2}x - \sqrt{3}$

6. $\pi^3x^2 - x + \pi^4$

Graph each polynomial. To get full credit your graph must include the correct end behavior and the correct behavior at each root (crossing or bouncing off the x-axis).

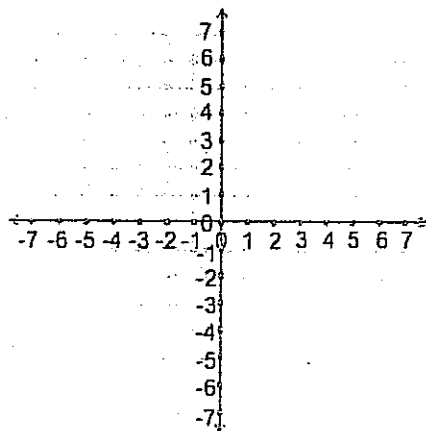
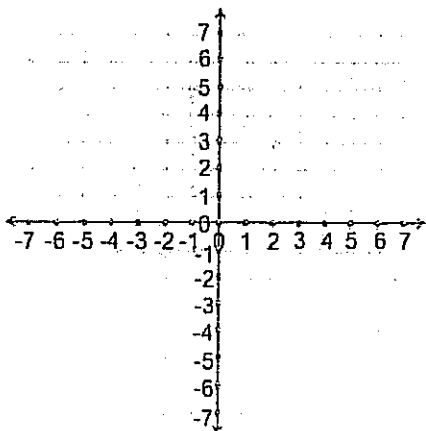
7. $f_1(x) = x^3 - 3x^2$

8. $f_2(x) = -2(x + 4)^2(x - 2)^2$



9. $f_3(x) = 4 - 2x$

10. $f_4(x) = x^3 + 2x^2 - 15x$



Find the domain of f , g , and h .

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

12. $g(x) = \frac{1-x}{3}$

13. $h(x) = \frac{2}{x^2-4x}$

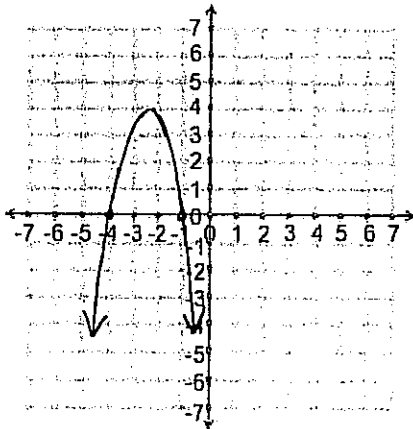
Simplify each rational expression.

14. $\frac{10ab^5}{15a^4b^4}$

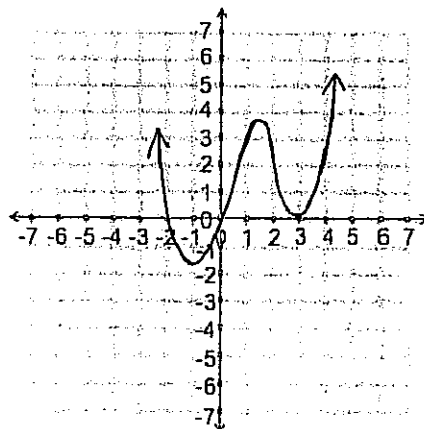
15. $\frac{2x^2-8}{4x^2-4x-8}$

What functions are graphed below? Write your final answer for each question as a polynomial.

16.

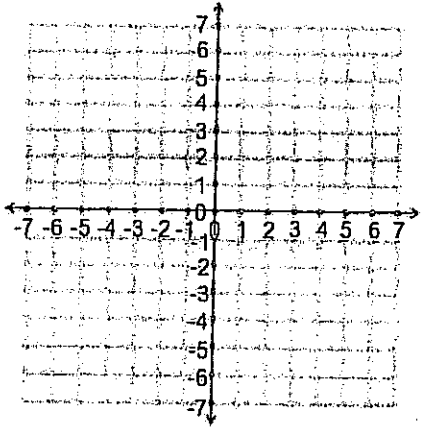


17.



18. What is the smallest number of x -intercepts an odd degree function can have? Why?

19. Graph the function $f(x) = 2^{-x} - 3$ and state its domain and range.



Domain:

Range:

Solve each equation.

20. $\frac{1}{x} + \frac{x}{3} = \frac{4}{3}$

21. $\frac{2x-1}{x^2-2x-8} + \frac{3}{x-4} = \frac{4}{x+2}$

Simplify.

22. $\frac{1}{x} - \frac{1}{x+1}$

23. $\frac{x^2-9}{x^3-7x+12} \div \frac{x^2-3x-4}{2x+2}$

Extra Credit: Graph the function $f(x) = \frac{x^3-x^2-2x}{x^2+x}$. (Hint: Find the domain and simplify the function.)

