

Algebra III: Blizzard Bag #2
Power, Polynomial, and Rational Functions

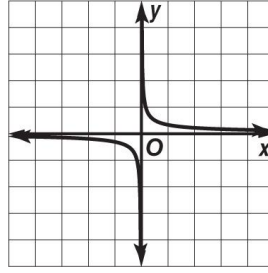
- Students need to complete the following assignment, which will aid in review for the end of course exam.

- Look back on previous notes from the sections covered, if you need assistance completing the work.

- ALL of the problems need to be completed.

Chapter 2: Power, Polynomial and Rational Functions

1. The graph of $f(x) = \frac{1}{4}x^{-\frac{1}{5}}$ is shown at the right.
State the domain of the function.



2. Solve $\sqrt[3]{10x + 2} - 3 = -5$.

3. Describe the end behavior of $f(x) = -2x^3 + 5x^2 + 3x - 1$ using limits.

4. What is the greatest possible number of real zeros of
 $f(x) = 4x^3 - 11x^2 - 54x + 45$?

5. What is the greatest possible number of turning points of
 $f(x) = -2x^5 - 9x^4 + 5x^3 + x - 6$?

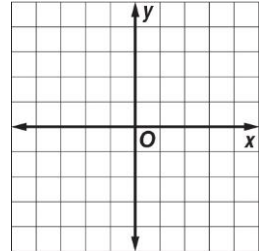
6. Divide $(4x^4 - 2x^2 + 1)$ by $(x - 2)$ using synthetic division.

7. Find the remainder when $x^5 + x^3 + x$ is divided by $x - 3$. Is the binomial a factor of the polynomial?

8. List all possible rational zeros of $f(x) = 4x^3 + 5x^2 - x + 2$.

9. Determine the asymptotes for the graph of $f(x) = \frac{x^2 - 4}{x^3 - 5x^2 + 6x}$.

10. Sketch the graph of $f(x) = \frac{x^2 - 1}{x^3 - x^2 + 12x}$.



11. Solve $\frac{1}{a} + \frac{2}{a-3} = \frac{a-1}{a-3}$.

12. Solve $4x^2 + 11x - 3 \leq 0$.

13. Solve $\frac{14}{x^2 - 3x} - \frac{8}{x} < \frac{-10}{x-3}$.

14. Write a polynomial function of least degree with real coefficients in standard form that has zeros -2 , 1 , and $4i$.

15. According to Descartes' Rule of Signs, how many positive real zeros could $f(x) = -x^4 - 6x^3 + 2x^2 + 2x - 8$ have?