Name _____

Hour _____ Date _____

Halloween Activity

College Algebra

Work each problem. Then write the answers as an ordered pair (a, b) and follow the instructions for graphing on the sheet provided.

Right Eye

1. a. What is the only real zero of $f(x) = x^3 - 5x^2 + 3x - 15$

   b. A quartic function is of degree _?_

2. a. A quintic function graph can make at most _?_ turns

   b. Solve: $\frac{x}{2} = 4$

3. a. What is the slope of a line perpendicular to $3x + 3y = 12$?

   b. Combine $(7 - 8i) - (-2 - 13i)$. Write the answer in the form a + bi. What is the value of b?

Plot the points from #1, 2, 3, and connect the points.

Left Eye

4. a. What is the <u>opposite</u> of the remainder of $\left(3x^3 + 5x^2 + 8x + 6\right) \div \left(3x + 2\right)$?

   b. $x^2 - 18x + 81$ factors into $\left(x - ?\right)^2$

5. a. What is the y-intercept of the line that goes through (8, 4) and (4, 1)?

   b. What is the positive zero of $3x^2 - 10x - 8$?

6. a. What is the leading coefficient of $y = -6x^3 + 3x^2 - x + 4$?

   b. Solve: $\frac{3}{2}x = 6$

Plot the points from #4, 5, 6, and connect the points.

Nose

7. a. How many non-real zeros does $y = 2x^3 - x^2 + 10x - 5$ have?

   b. Calculate: $\sqrt[7]{128}$ = ?

8. a. What is the negative solution of $6 = x^2 - 3$?

   b. What is the slope of a horizontal line?

9. a. A quadratic function with a discriminant of _?_ has only 1 unique solution.

   b. What is the slope of $4x + 4y = 11$?

Plot the points from #7, 8, 9, and connect the points.

Mouth

10. a. What is the y-intercept of $3x - 2y = -10$?

    b. Solve: $4x = -16$

11. a. The domain of $f(x) = \sqrt{x - 4}$ is $[?, \infty)$.

    b. 0.000000342 can be written in scientific notation as $3.42 \times 10^{?}$.

12. a. Solve: $3 + \sqrt[3]{x} = 2$

    b. Solve: $-5 - 3x = 5x + 51$

13. a. Multiply $(7 + 2i)(1 + 6i)$. Write the answer in the form a + bi. What is the value of a?

    b. Evaluate: $-\sqrt[3]{64}$

Plot the points from #10, 11, 12, 13, and connect the points in order.