Name:_____

Honors Precalculus Summer Work

Summer 2025

DIRECTIONS: Please complete the problems below without a calculator. Completing this work towards the end of the summer (or at least reviewing your work towards the end of summer if you knock this out early) would be recommended so it is fresh in your mind. If you have forgotten how to do a problem, consider looking at your class notes (keep these from last year!) or reaching out to a classmate for help. Please use graph paper to help you draw accurate graphs. As always, show work and use proper notation. This summer work is due on the first day of class. You should also expect a test covering this material during the second week of classes. And while some time in class will be dedicated to reviewing this material from prior courses, the expectation is that most of this review should be done independently by you. If needed, I am always happy to help outside of class, too.

1. Sketch the graph of the line $2x - 3y = 6$.

2. Sketch the graph of $y = x^2 + 2$

3. Given $f(x) = -x^2 - 2x + 3$, find $f(-3)$ and $f(2x + 3)$.

4. Write the equation of the line passing the through the point $(2, -7)$ and having a slope of $\frac{2}{5}$.

5. Find the equation of the line passing through (3, 5) and (-2, 8).

6. Are the lines $6x + 3y = 15$ and $y = \frac{x}{2} - 3$ parallel, perpendicular or neither? Explain.

7. Given $f(x) = \begin{cases} 4 - 5x, x \leq -2 \\ 0, -2 < x < 2 \\ x^2 + 1, x > 2 \end{cases}$, find $f(-3), f(4), and\ f(-1)$. Then sketch the graph.

8. Find all real values such that $f(x) = 0$:

   a. $f(x) = 2x^2 + x - 6$

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

9. Simplify: $\frac{1}{x+1} - \frac{3x+4}{(x-2)}$