Please provide complete and well-written solutions to the following exercises.

No due date, but the quiz in Week 1 in the discussion section (on August 23) will be based upon this homework.

(Remember to also read the syllabus by 5PM PST, August 24.)

Q1: Quiz 1 Problems

Exercise 1. Find the equation for the line passing through the points $(-1, 4)$ and $(2, 6)$.

Exercise 2. Sketch the function $y = x^4$. Then sketch the function $y = x^5$.

Exercise 3. Find the equation for the line passing through $(1, 2)$ with slope 3.

Exercise 4.

- Sketch the function $y = \frac{x^2}{x^2-1}$. Is this function even, odd, or neither?
- Sketch the function $y = \sqrt{1-x^2}$. Is this function even, odd, or neither?
- Sketch the function $y = 2^{-x}$. Is this function even, odd, or neither?

Exercise 5. True or False: For any real number x, we have $\sqrt{x^2} = x$. Justify your answer.

Exercise 6. True or False: For any real numbers x, y, we have $|x + y| \leq |x| + |y|$.

Exercise 7. Sketch the region in the plane consisting of all real numbers x, y such that $|x| + |y| \leq 1$.

Exercise 8. Consider the curve satisfying the equation

$$x^4 - 4x^2 - x^2y^2 + 4x^2 = 0.$$

Is this curve the graph of a function $y = f(x)$?

Exercise 9. Solve for x: $x^2 + 5x - 7 = 0$.

Exercise 10. Compute: 2^{2+3}, $(2^2)^3$.

Exercise 11. Compute the determinant of the matrix $\begin{pmatrix} 2 & 3 \\ 4 & 5 \end{pmatrix}$.