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

Due October 2, at the beginning of class.

(Remember to also read the syllabus by noon PST, October 2.)

Assignment 1

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. Compute \(\cos(7\pi/4)\), \(\sin(2\pi/3)\) and \(\tan(\pi/3)\).

Exercise 4. Find the equation for the line passing through \((1, 2)\) with slope 3.

Exercise 5.

- 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?
- Sketch the function \(y = \cos(1/x)\). Is this function even, odd, or neither?

Exercise 6. True or False: For any real number \(x\), we have \(\sqrt{x^2} = x\). Justify your answer.

Exercise 7. True or False: For any real numbers \(x, y\), we have \(|x + y| \leq |x| + |y|\).

Exercise 8. Sketch the region in the plane consisting of all real numbers \(x, y\) such that \(|x| + |y| \leq 1\).

Exercise 9. 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 10. Solve for \(x\): \(x^2 + 5x - 7 = 0\).

Exercise 11. Compute: \(2^{2+3}, (2^2)^3\).