Java Exercises: Wednesday

**Exercise 1:** Create a program containing a JPanel and a JButton. The panel should draw a String displaying the number of times the button has been pressed. Include a reset button.

**Exercise 2:** Yesterday you constructed the diagram below to explain Proposition 1 of Book 1 of *The Elements*.

![Diagram](image1)

Construct this figure with `MoveablePoints` so that the initial two points may be moved by the user and the figure updated.

**Exercise 3:** Redo exercise 4 of Monday’s PostScript exercises. That is, beginning with a 3:4:5 triangle, construct the following figure and add a button that will rotate the triangle incrementally. Add a reset button as well.

![Diagram](image2)
Exercise 4: Create an animation that rotates the triangle smoothly. It should include a start and reset button.

Exercise 5: Animate a ball falling down a JPanel. There should be tick marks on the side of the panel indicating distance fallen.

For extra credit, color the falling ball red and leave a family of blue balls indicating where the ball was at one second (or some other desirable unit) intervals.

Exercise 6: Yesterday, you constructed the following figure to explain Euler’s formula

\[ e^{ix} = \cos x + i \sin x. \]

Add a MoveablePoint so that the user can vary \( x \) and the figure will be updated. You will need to think about how best to use a MoveablePoint to represent \( x \).