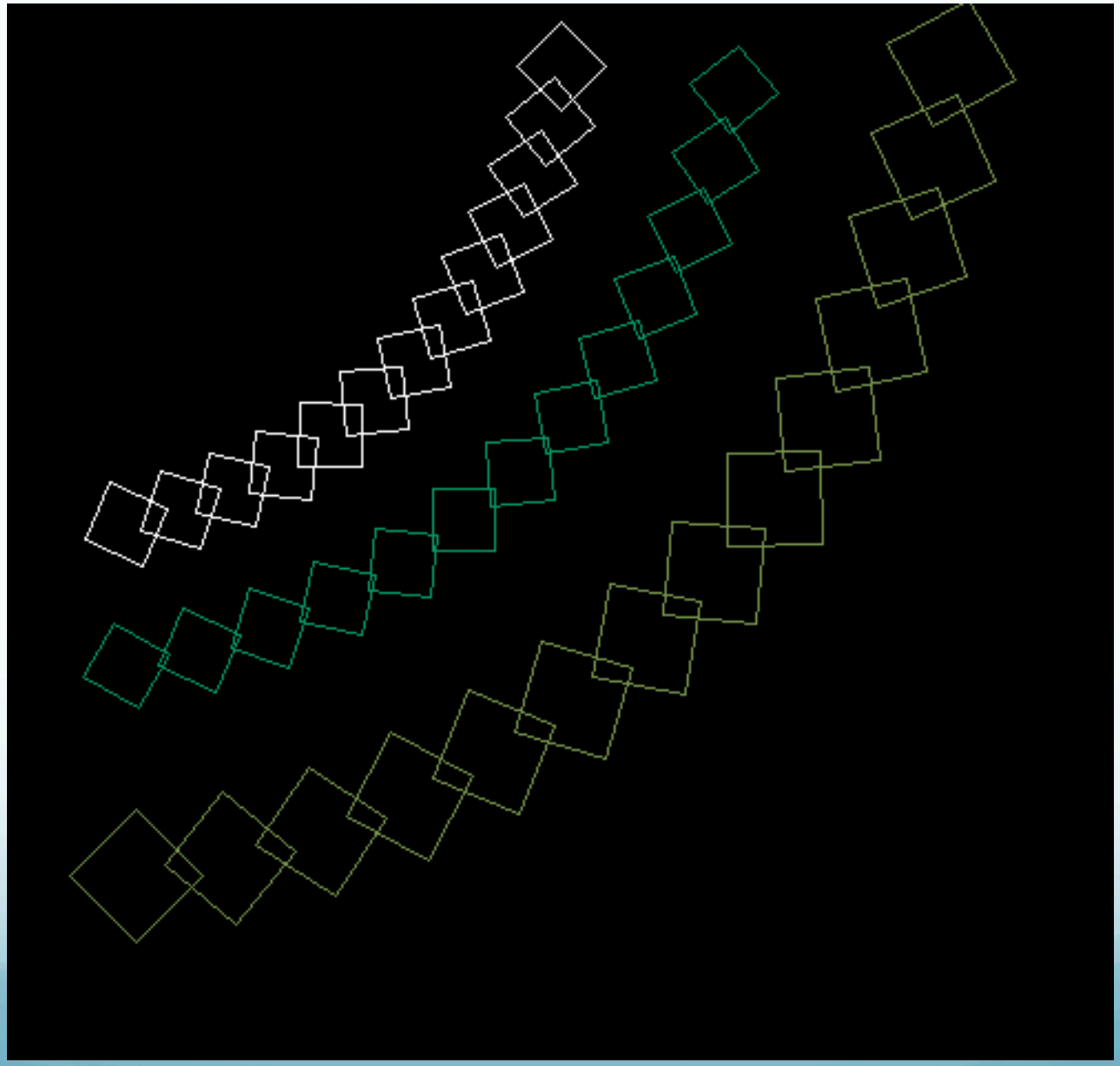
# CSC 240
# Computer Graphics

Fall 2015
Smith College

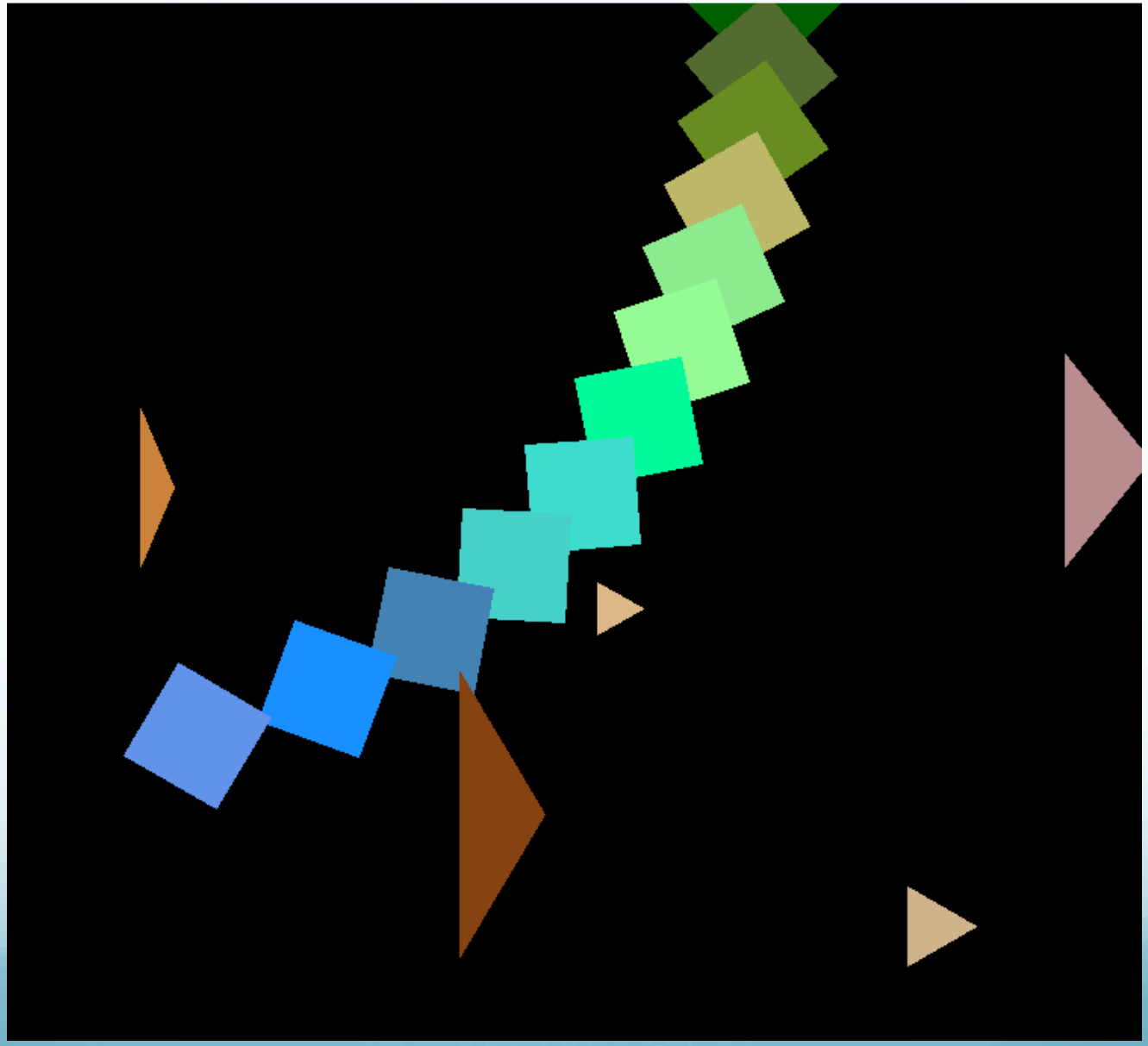
# Outline: 10/14

- HW3 examples and feedback
- Bezier curves
  - Review
  - Go over lab
  - Demo
- Splines
- Bezier surfaces

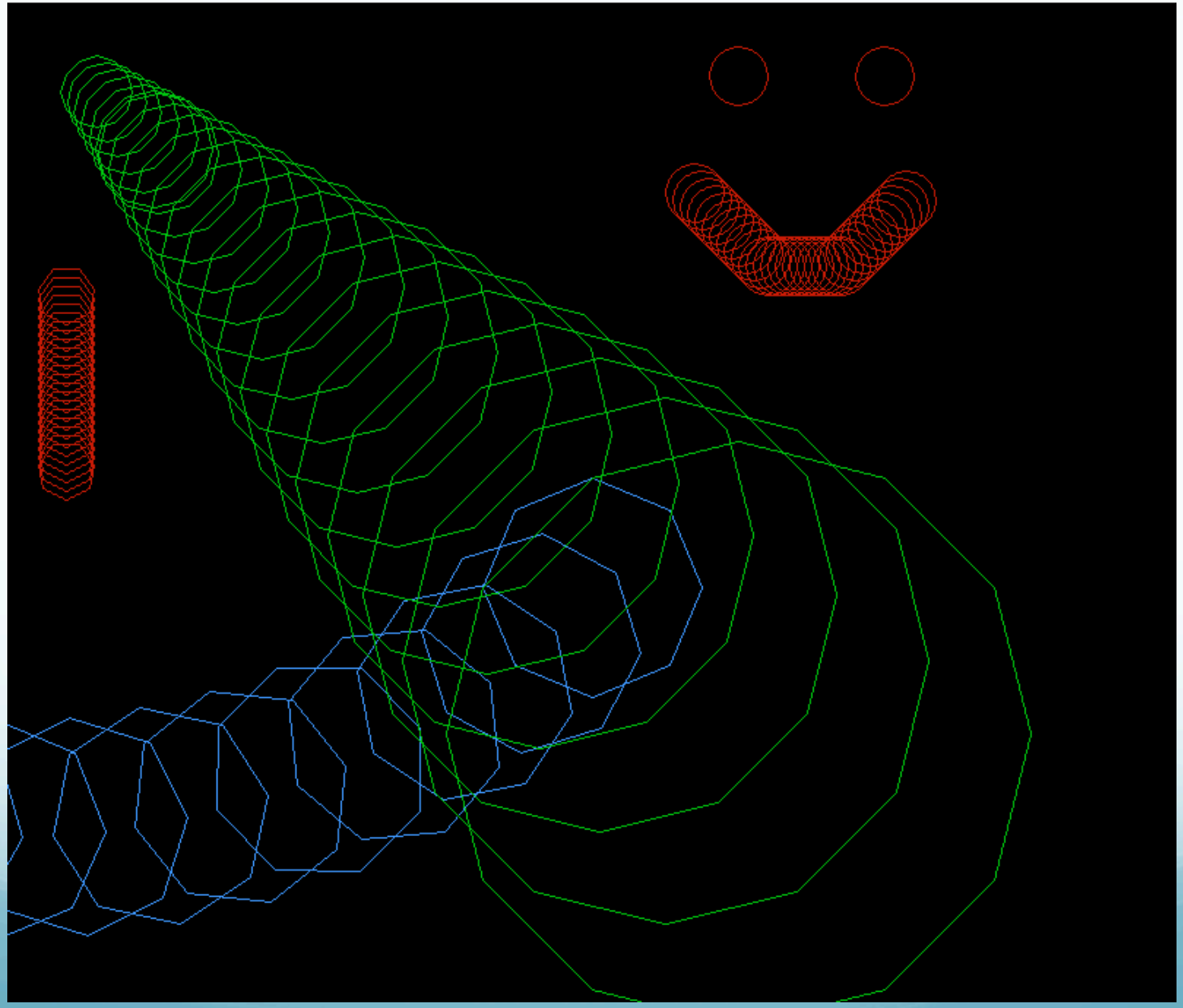
# HW 3 examples



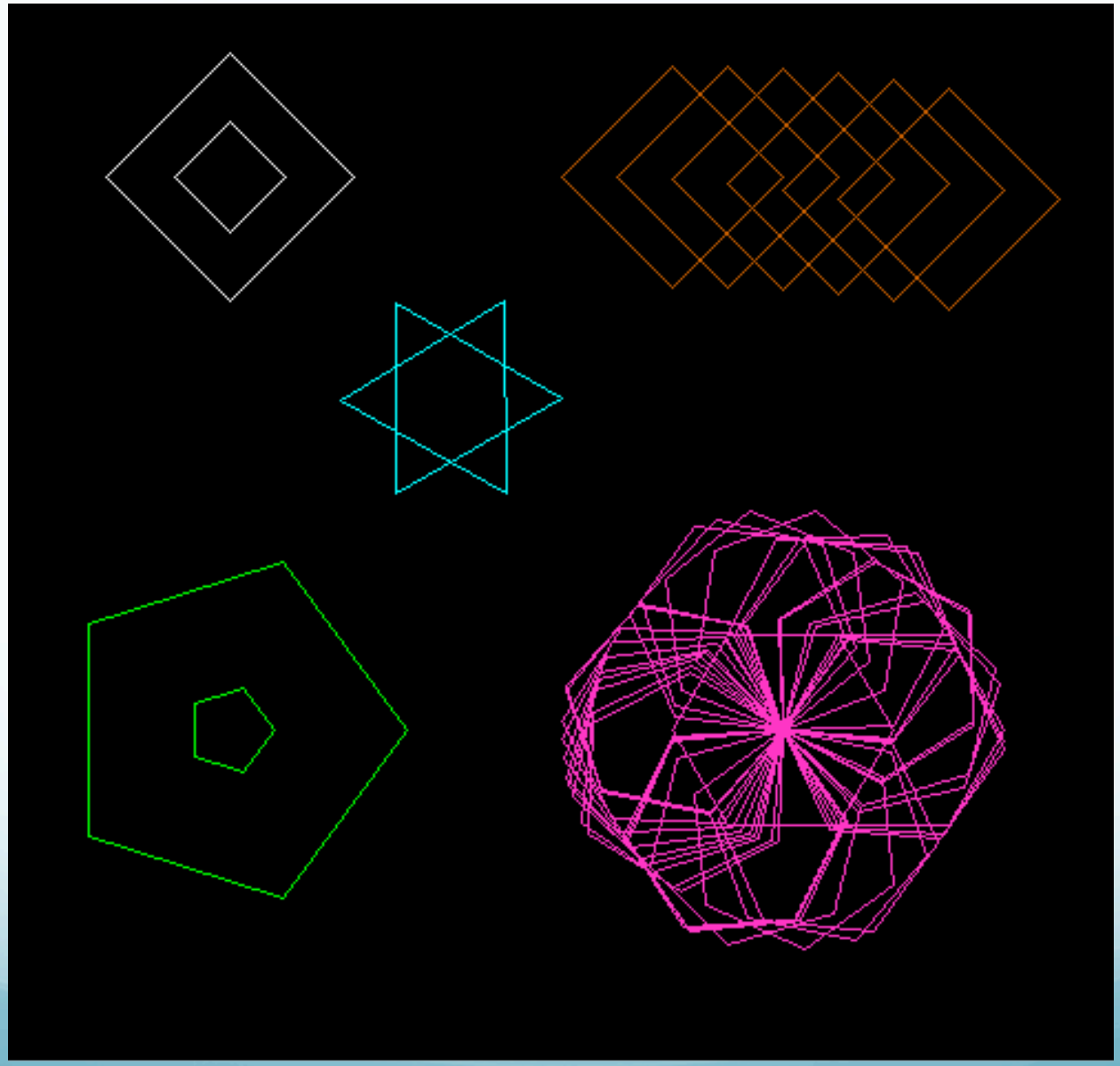
# HW 3 examples



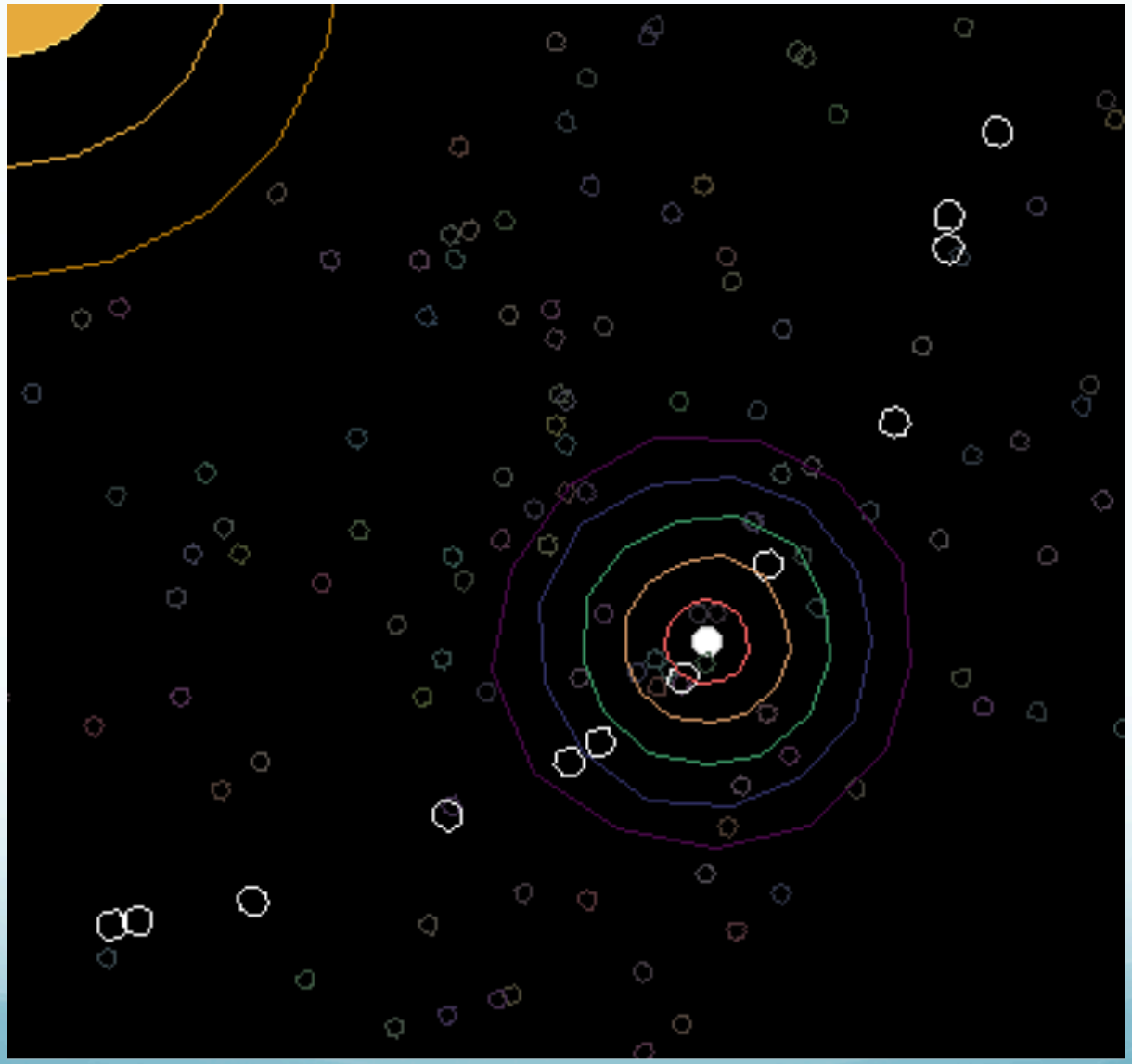
# HW 3 examples



# HW 3 examples



# HW 3 examples



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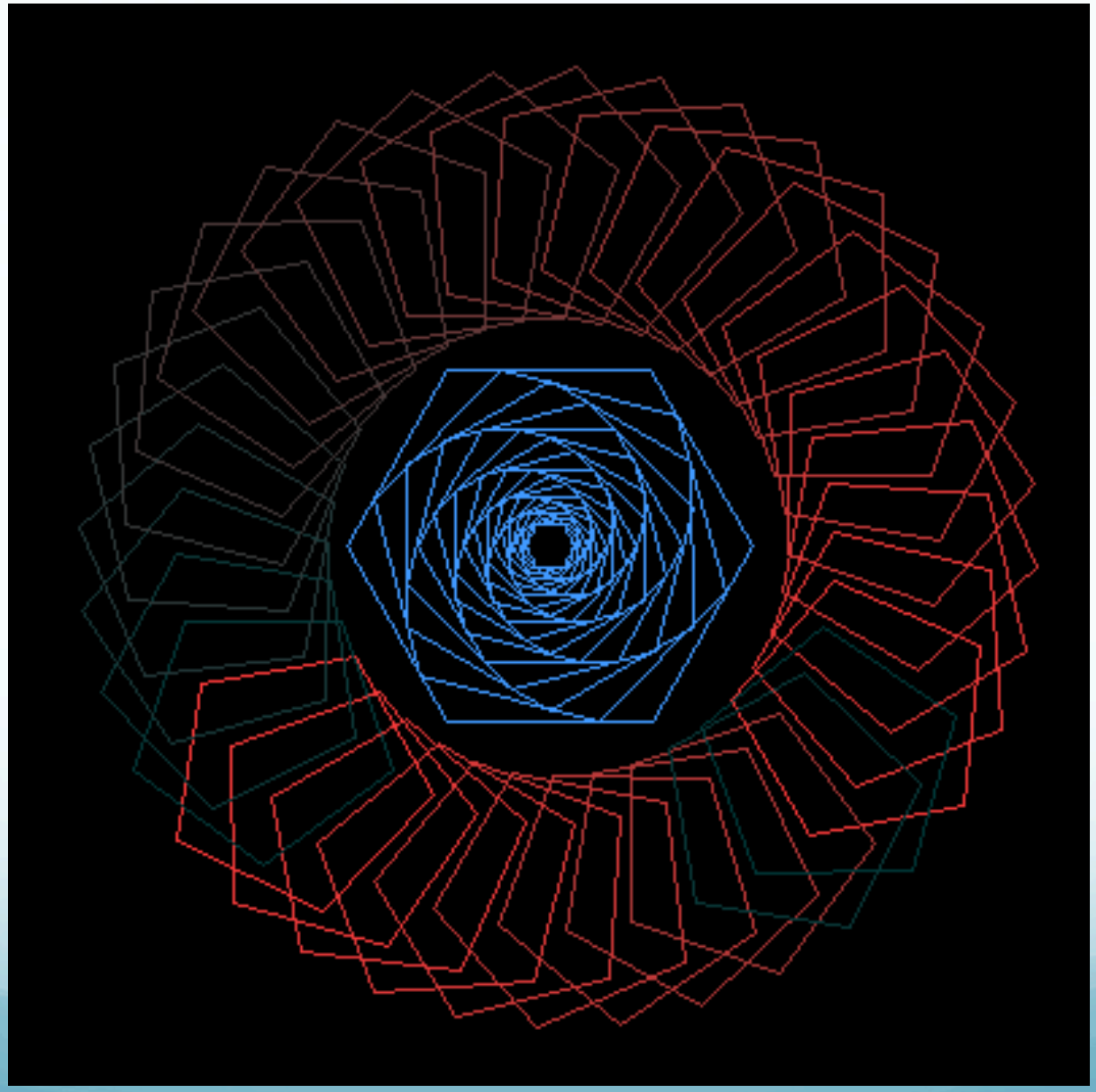
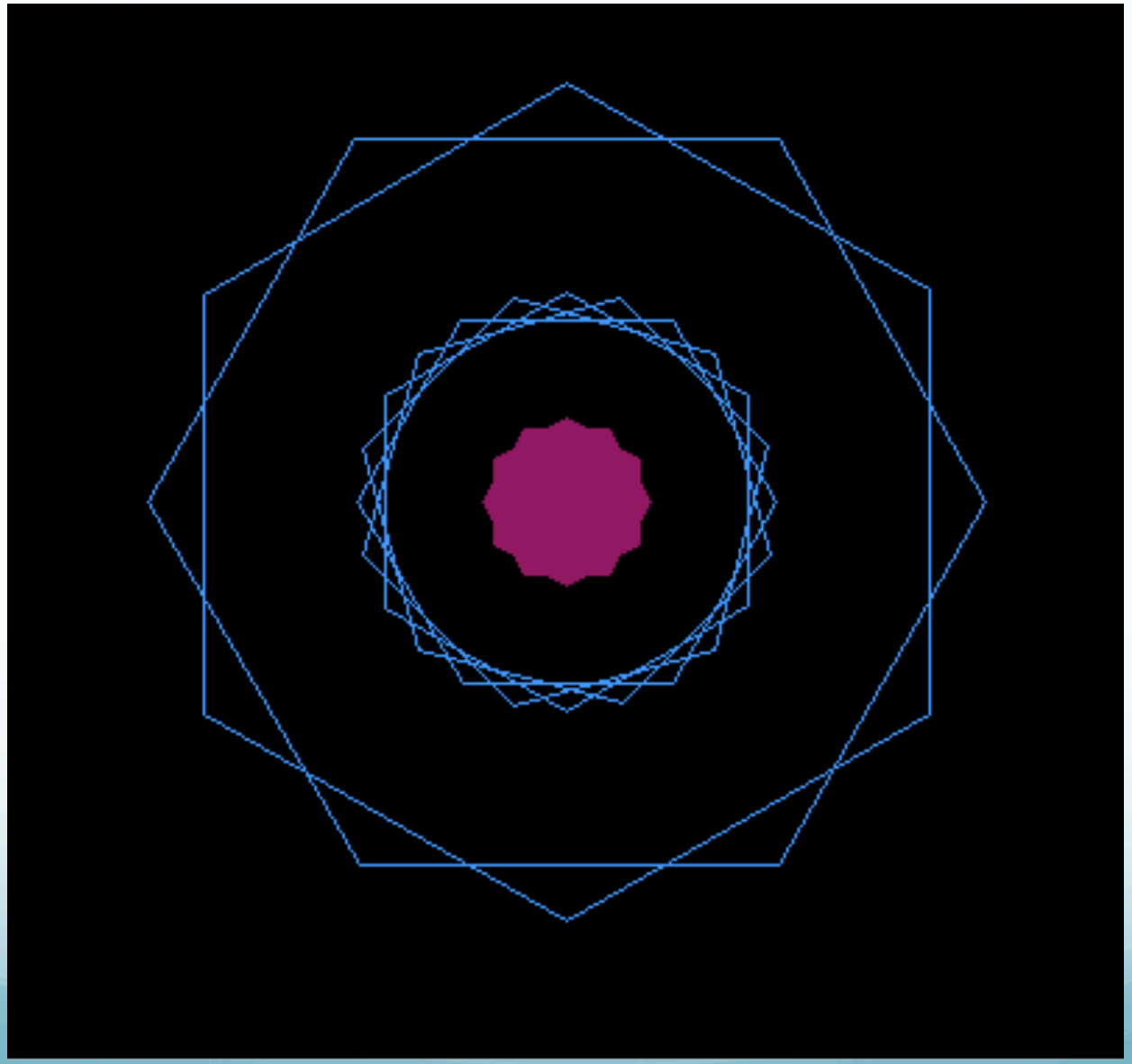


# HW 3 examples



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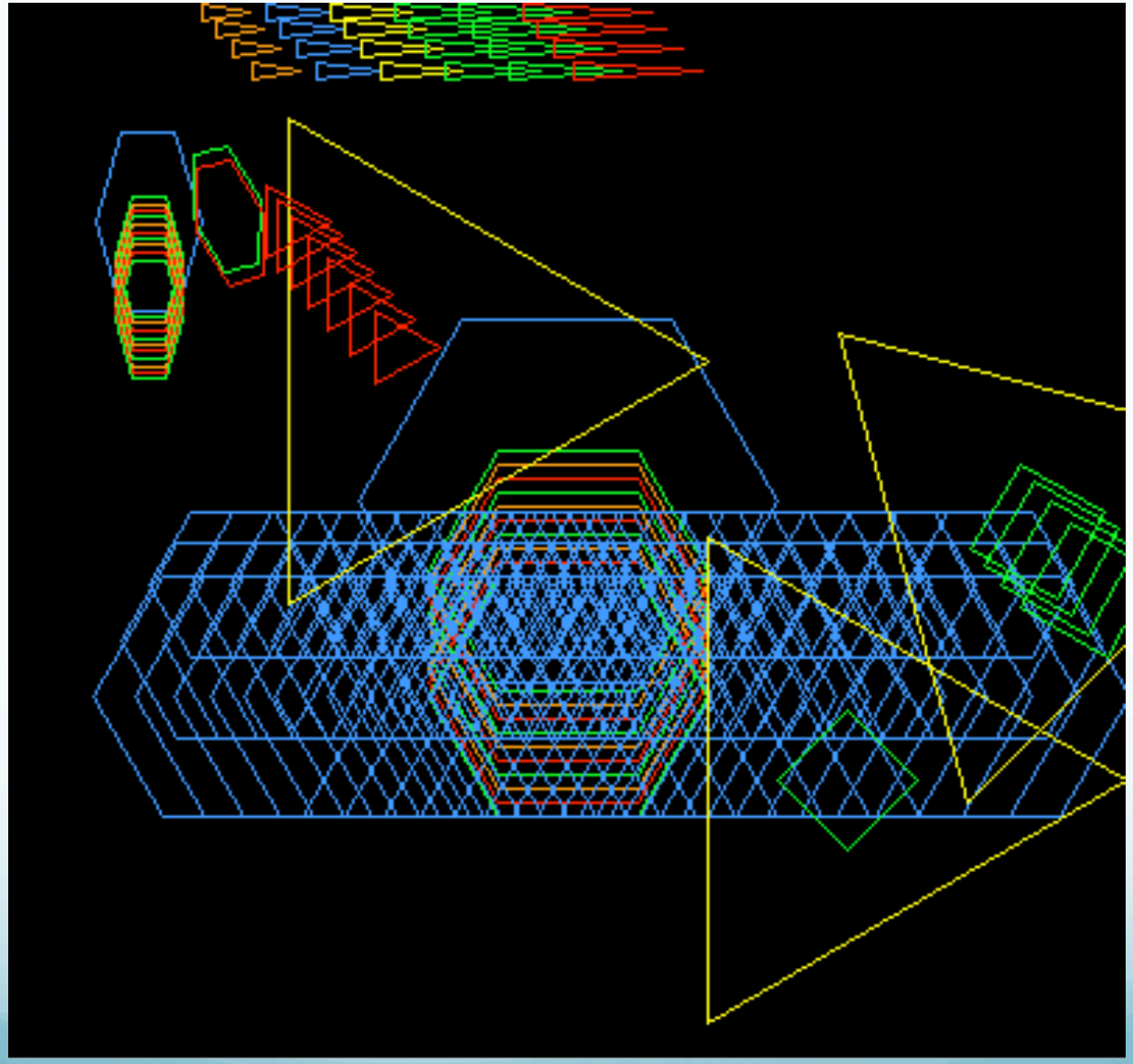

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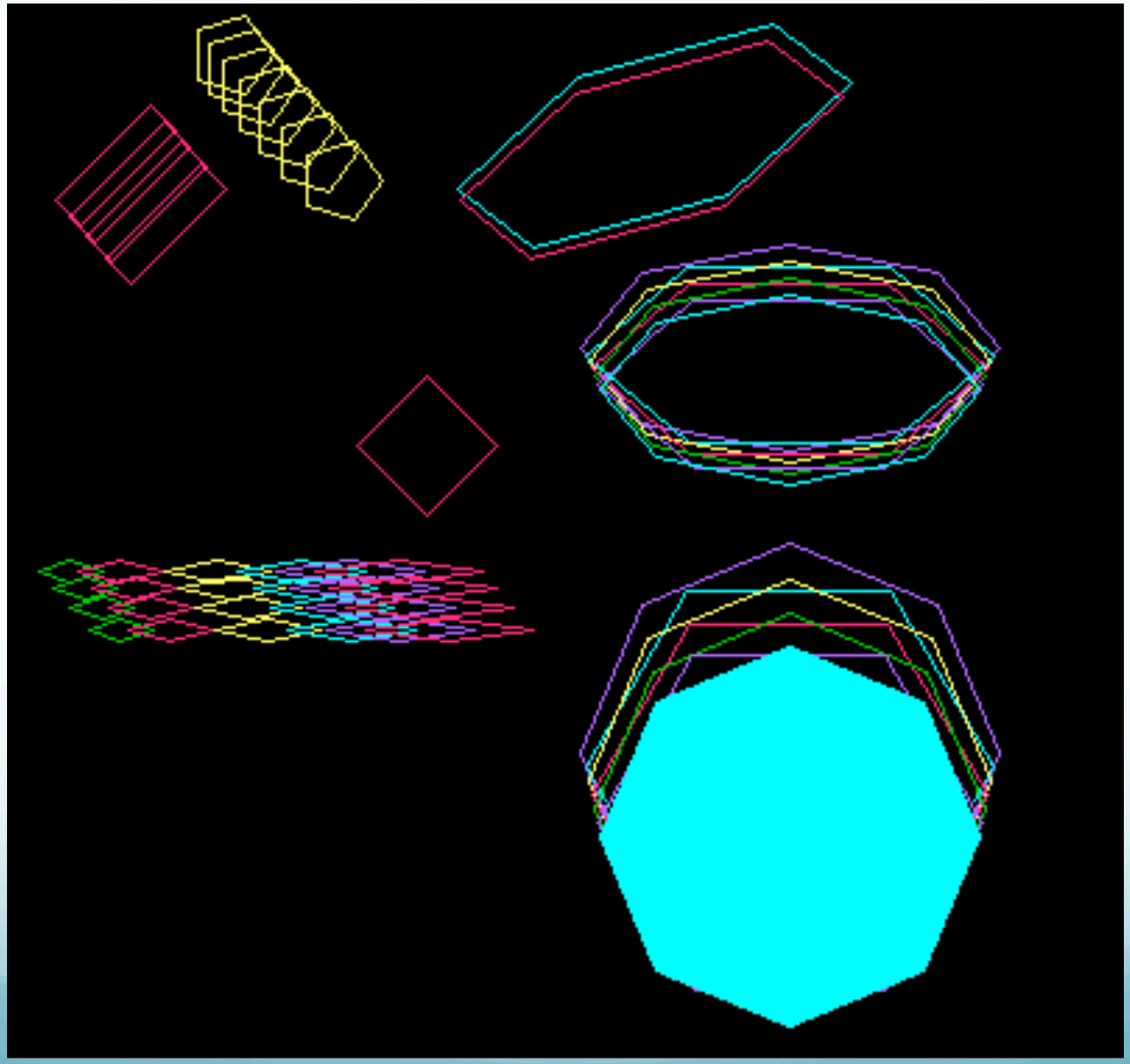

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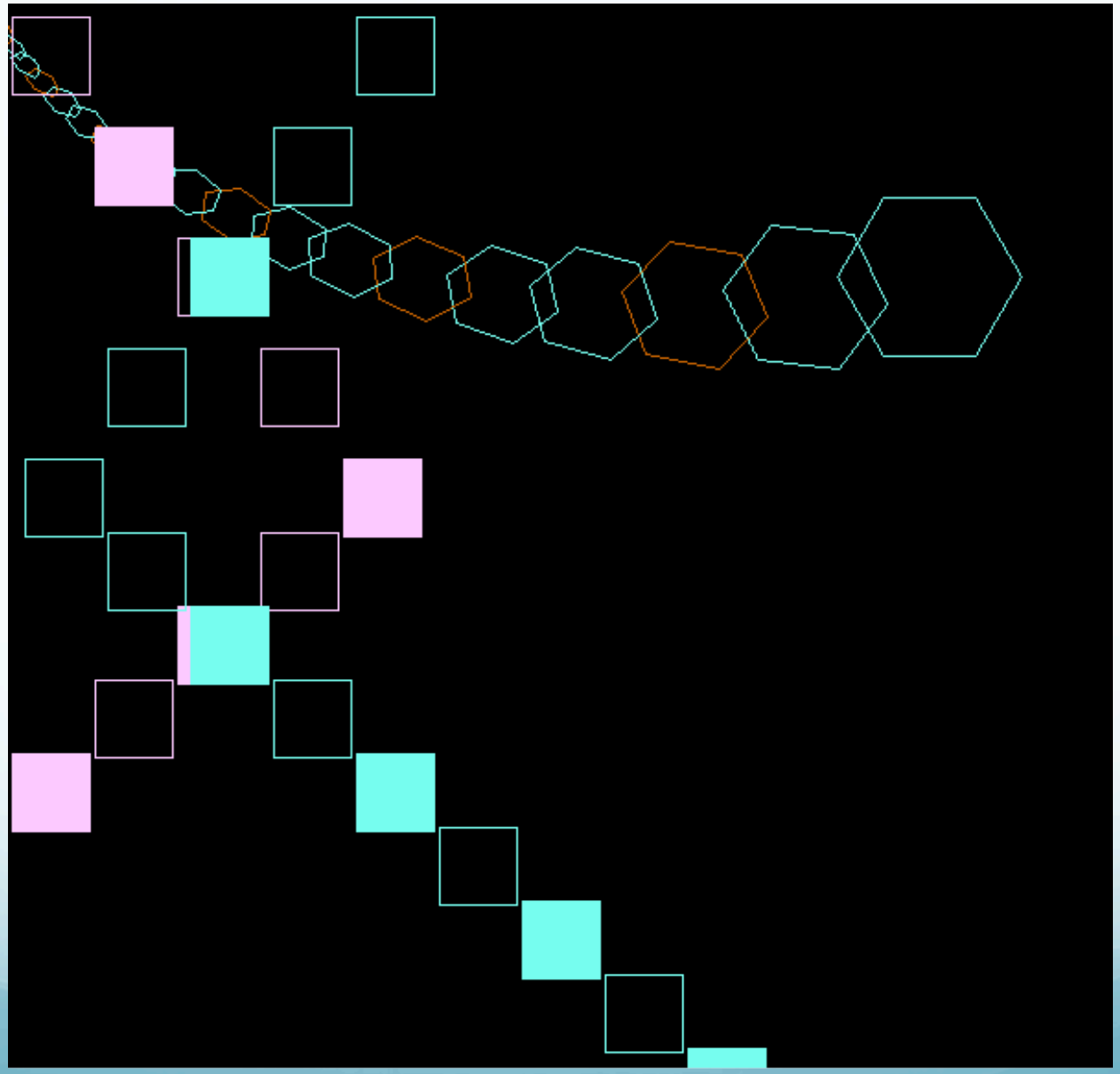

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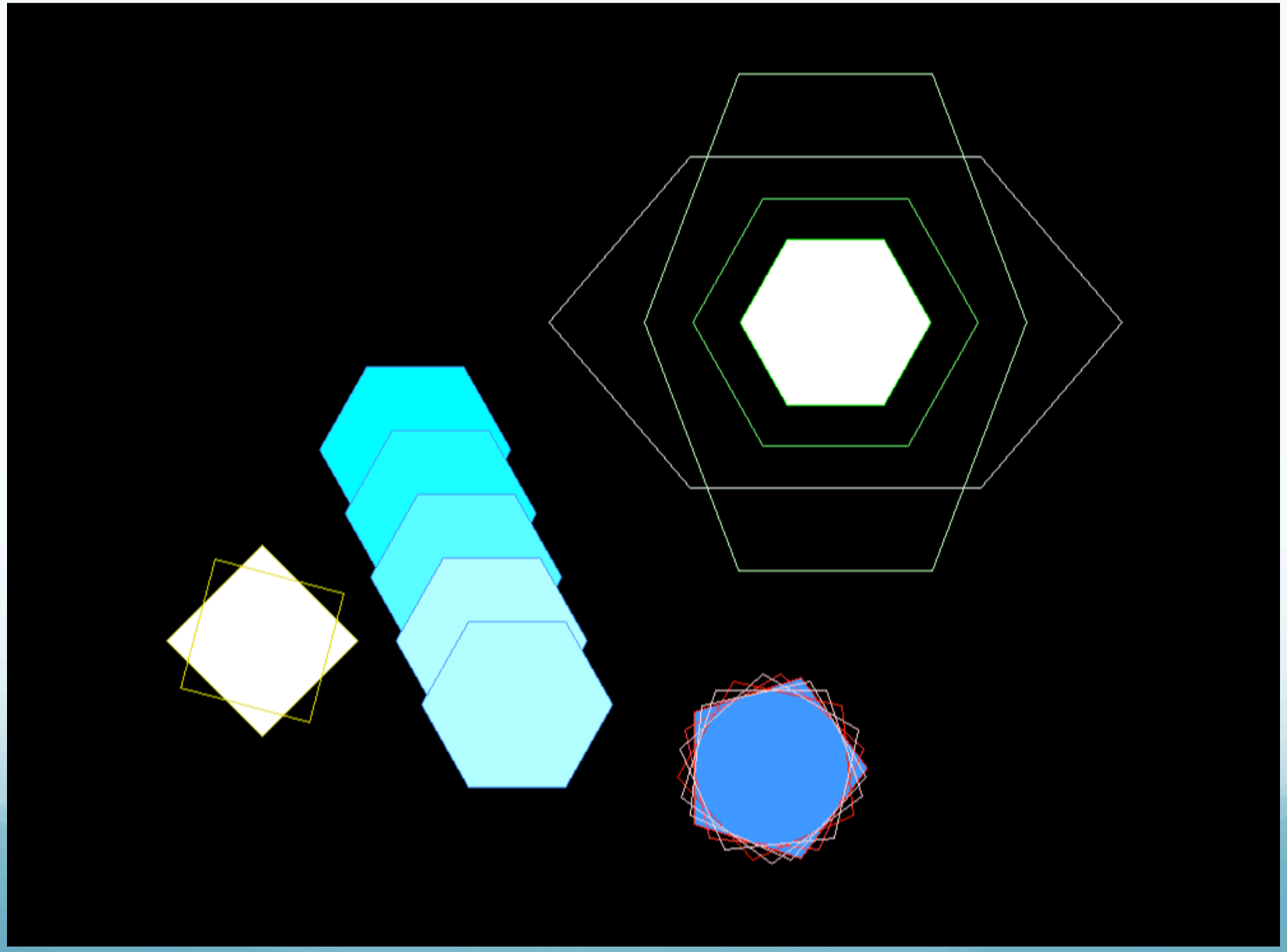

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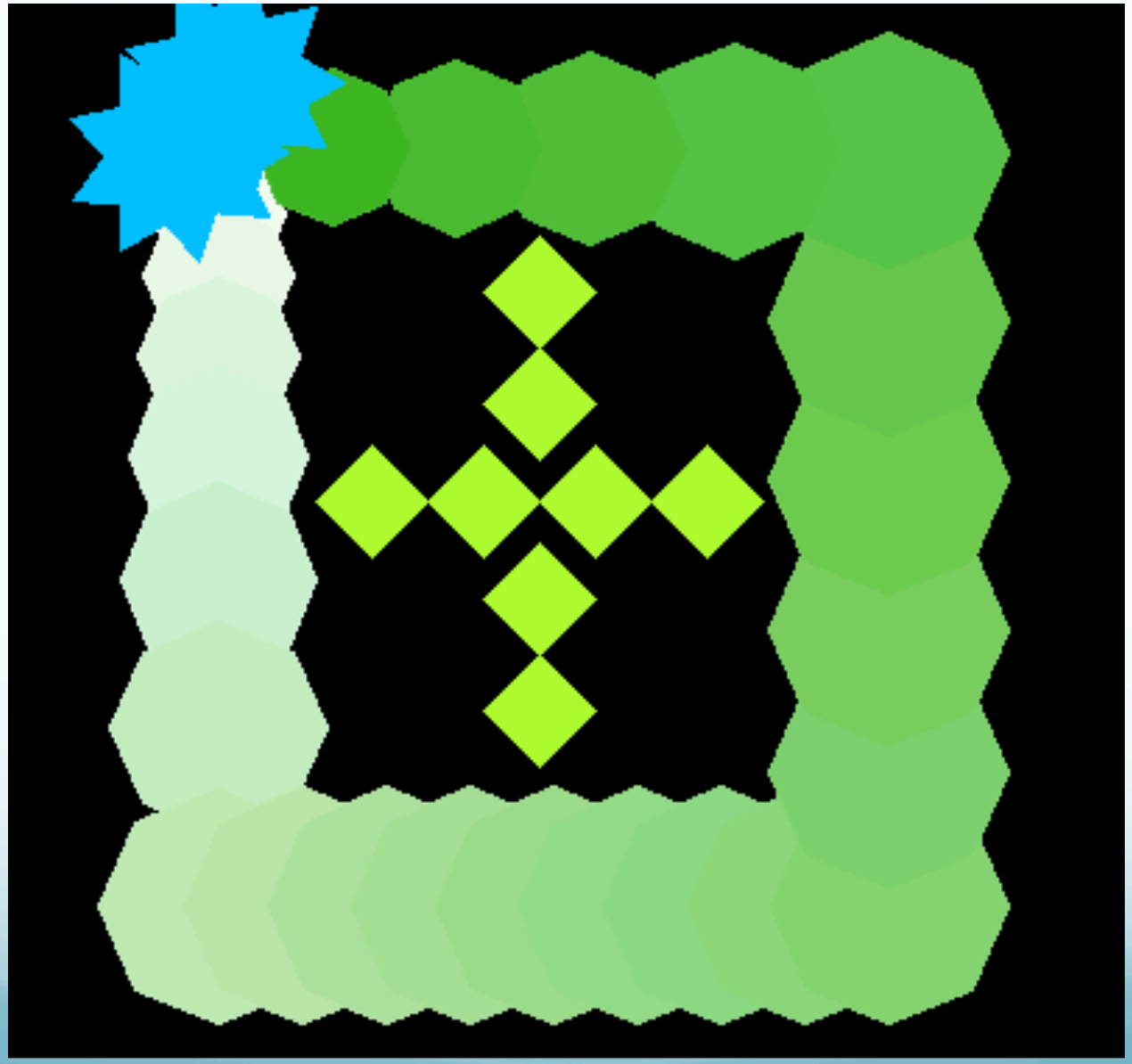

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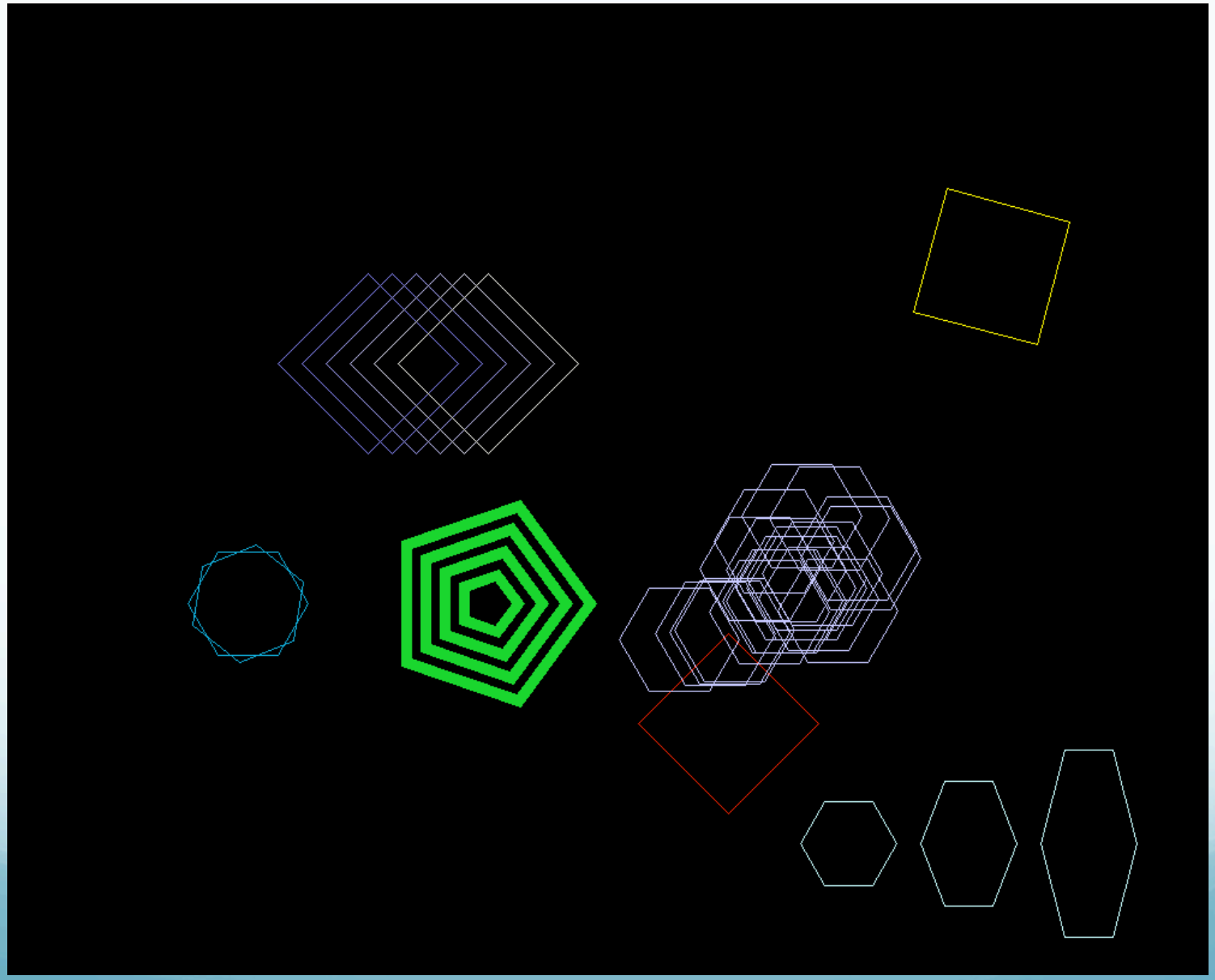

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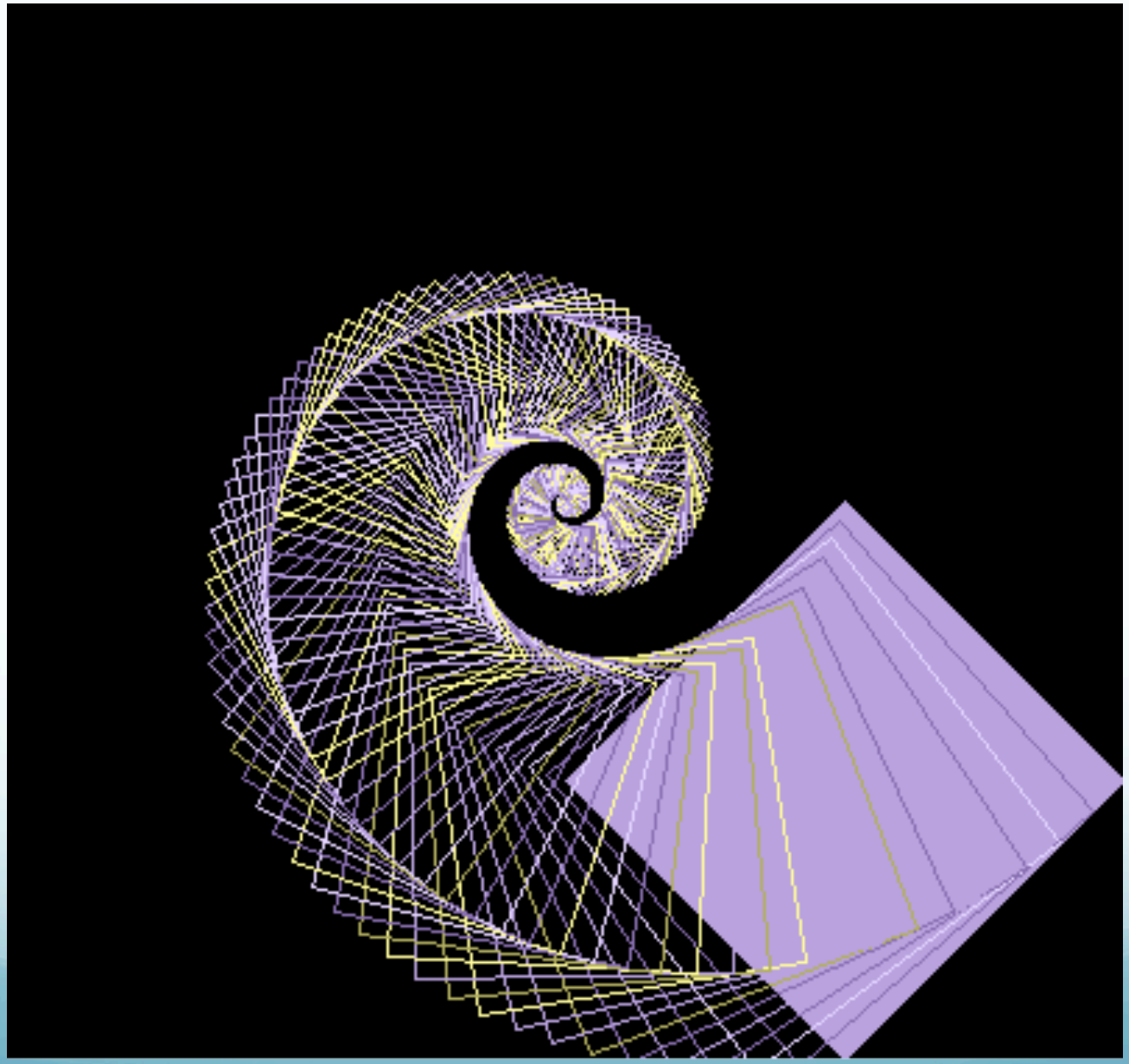

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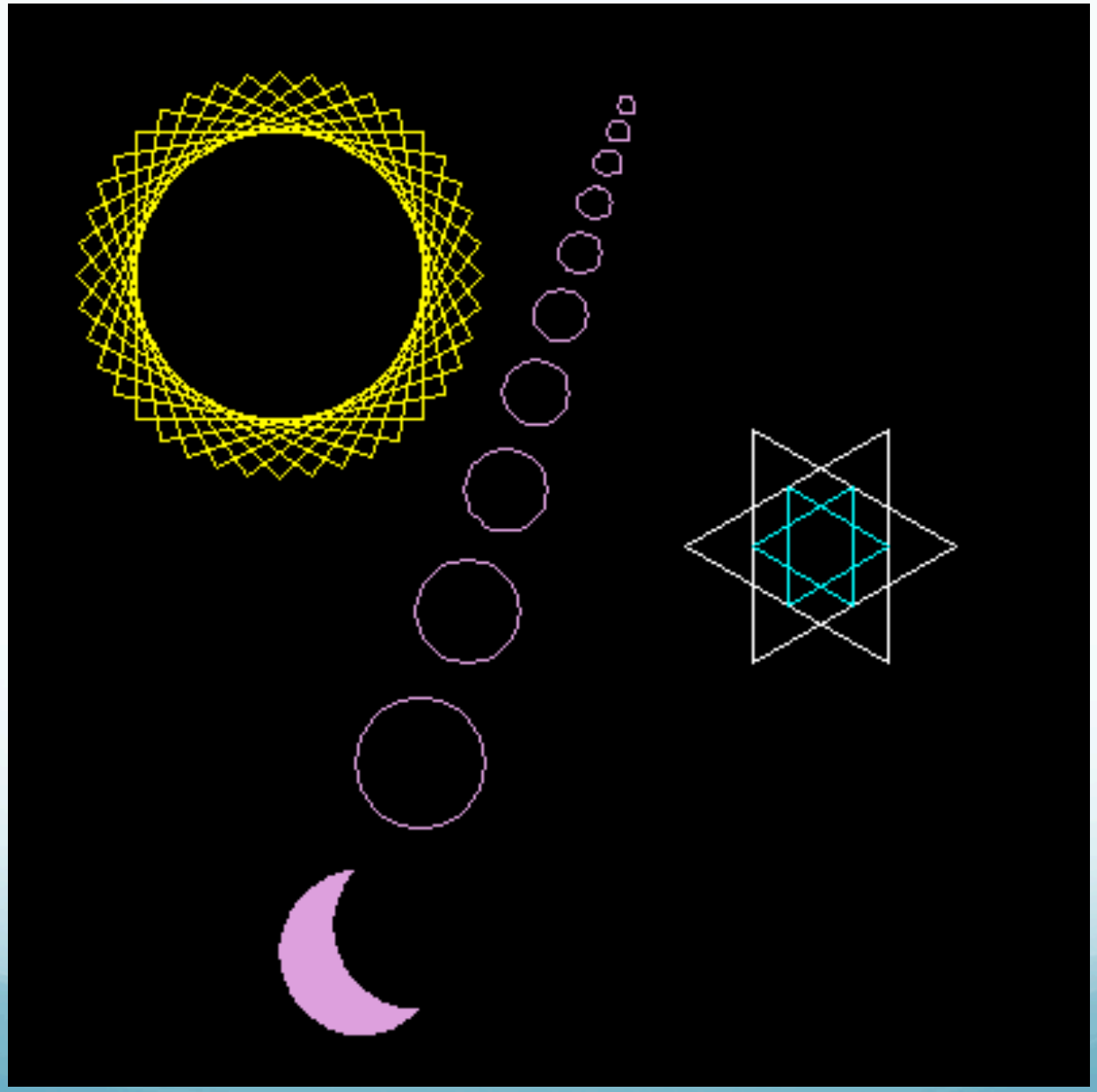

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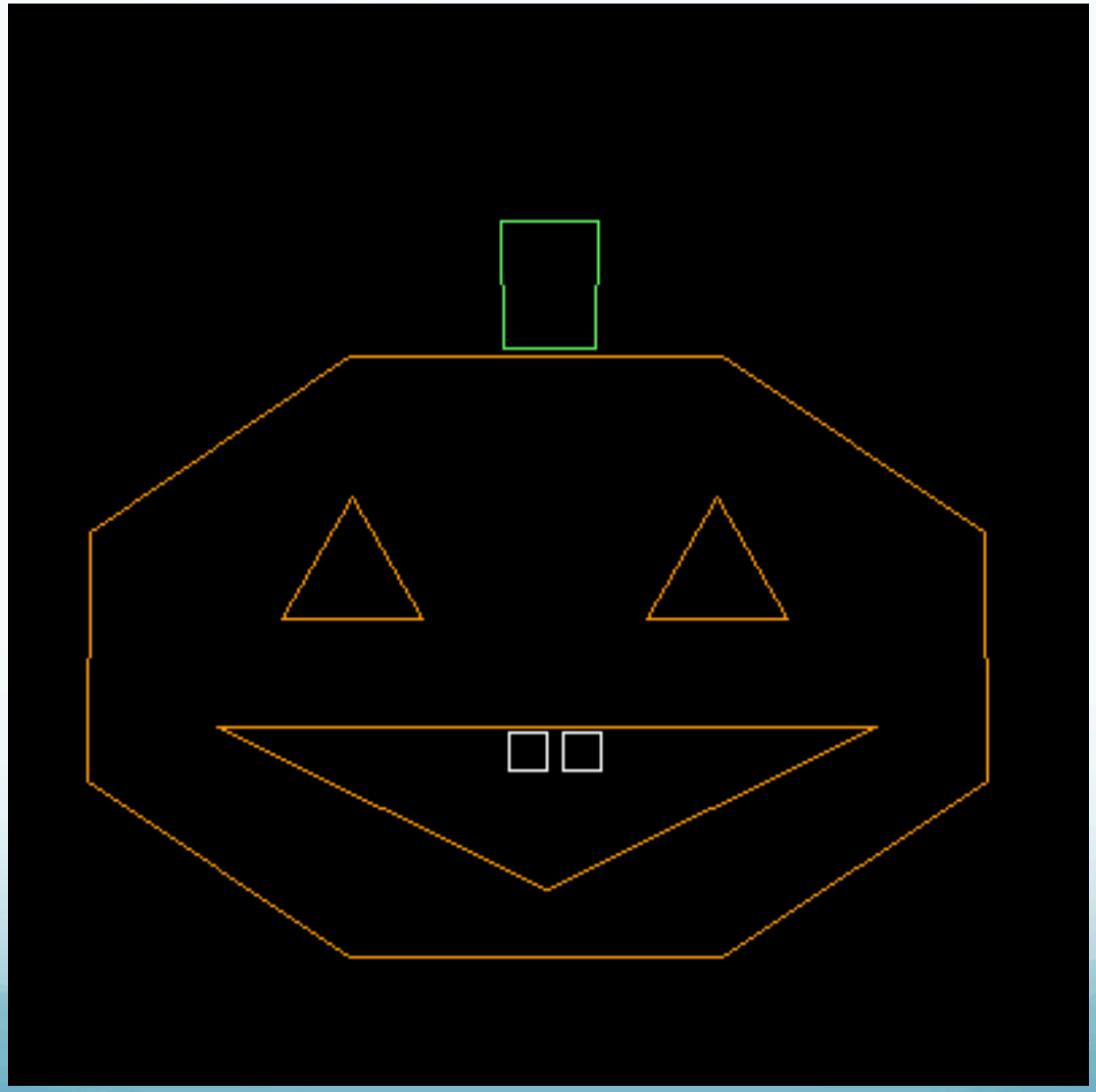
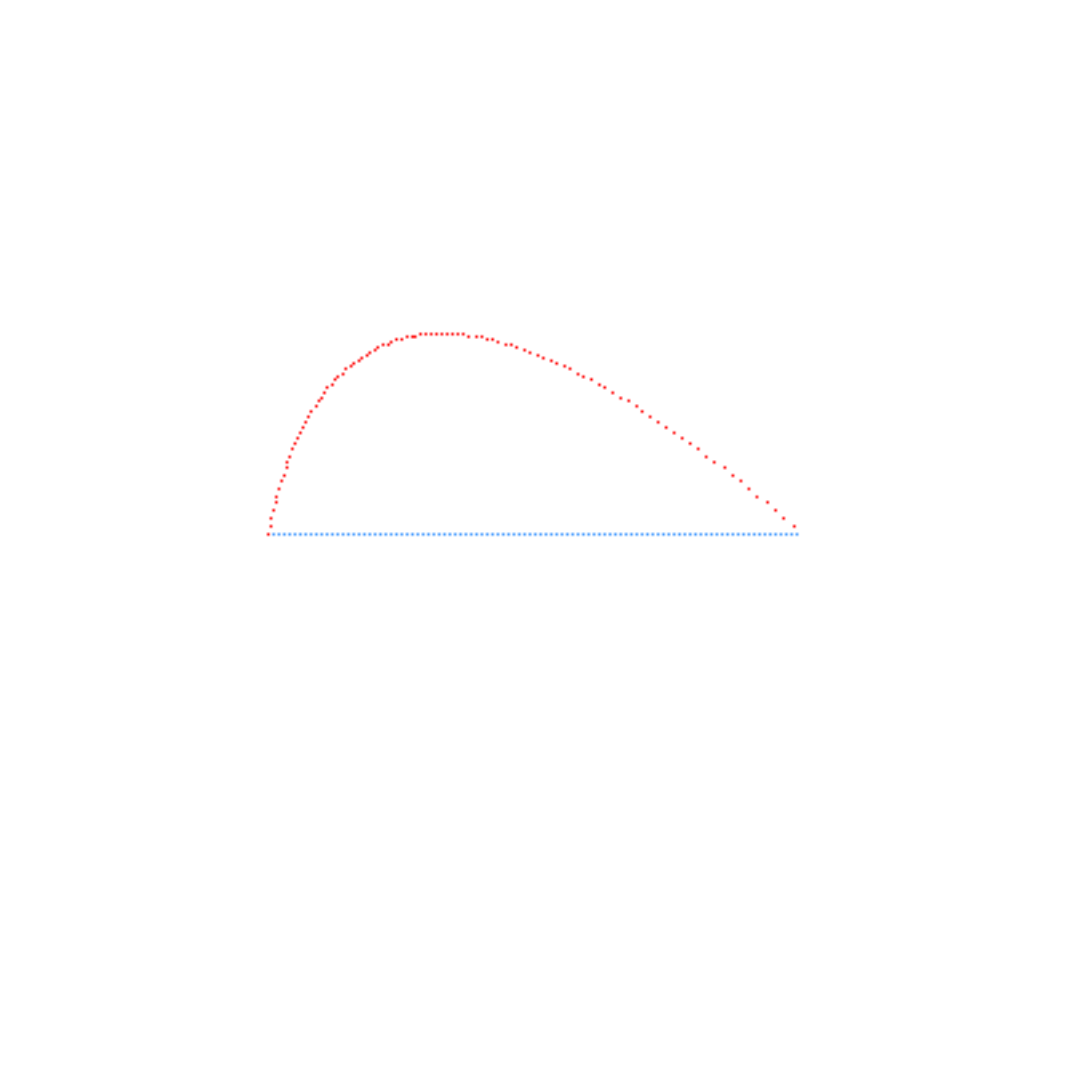


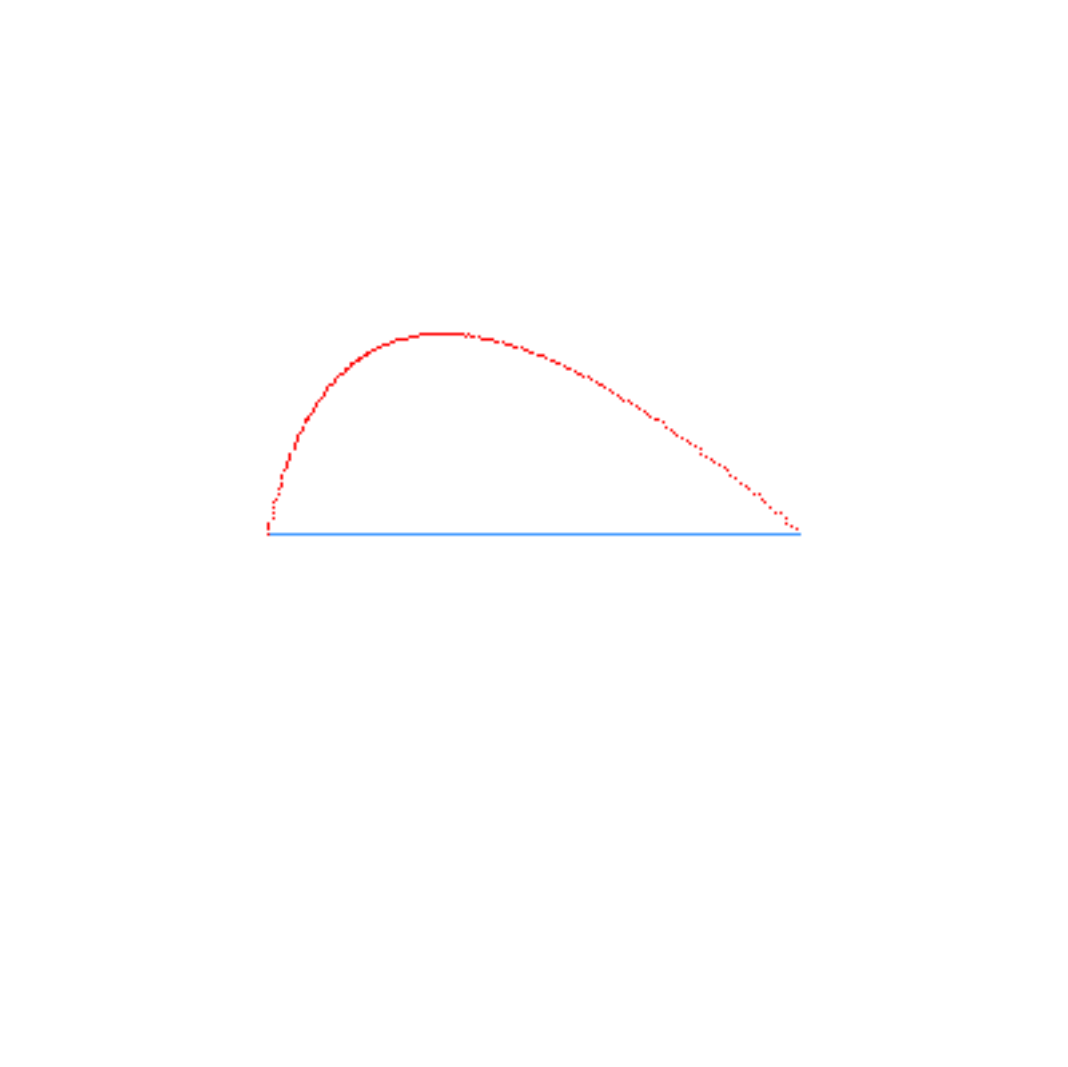
# Lab 6: Spinning Square

- Transformation order revisited

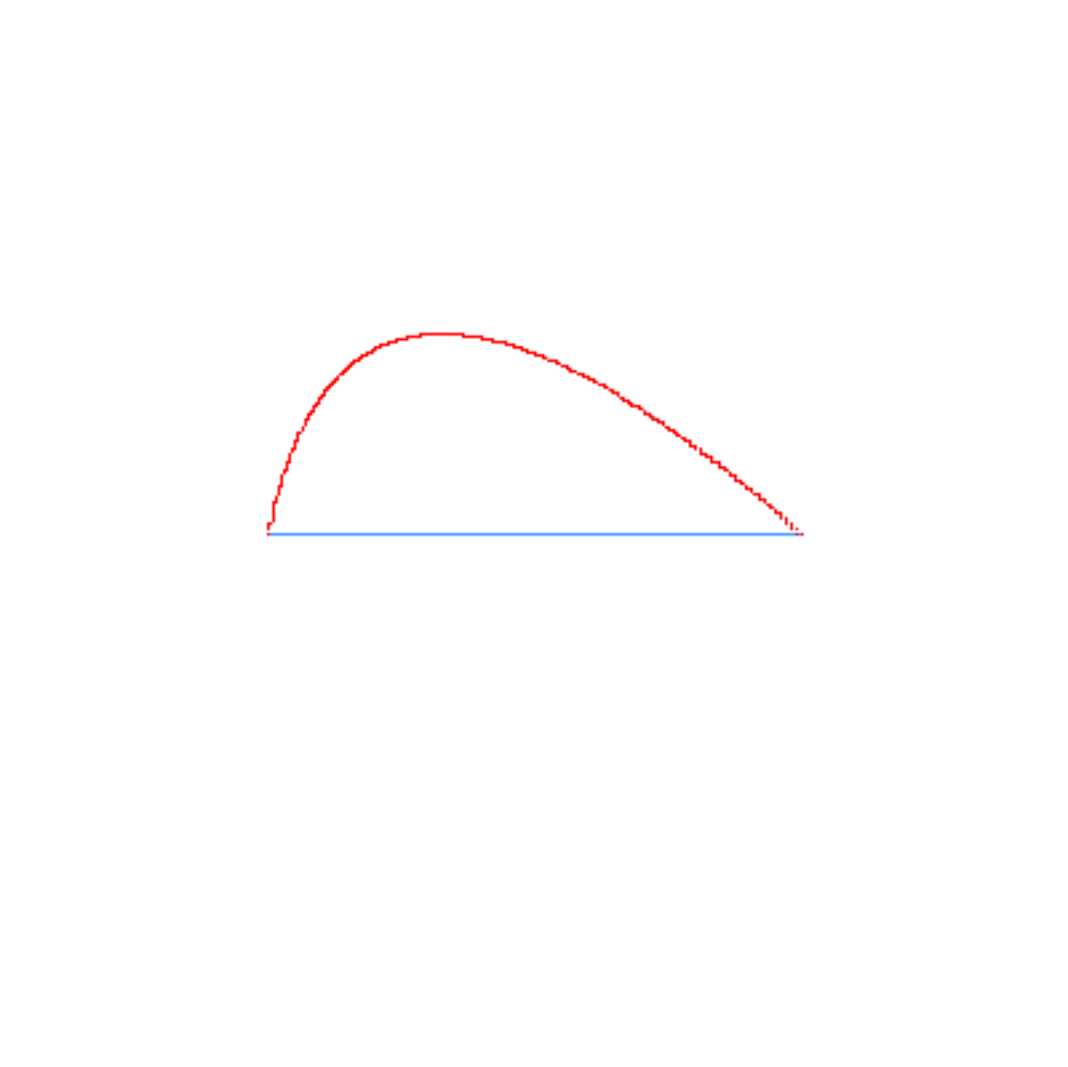
# Lab 7: num_t = 100



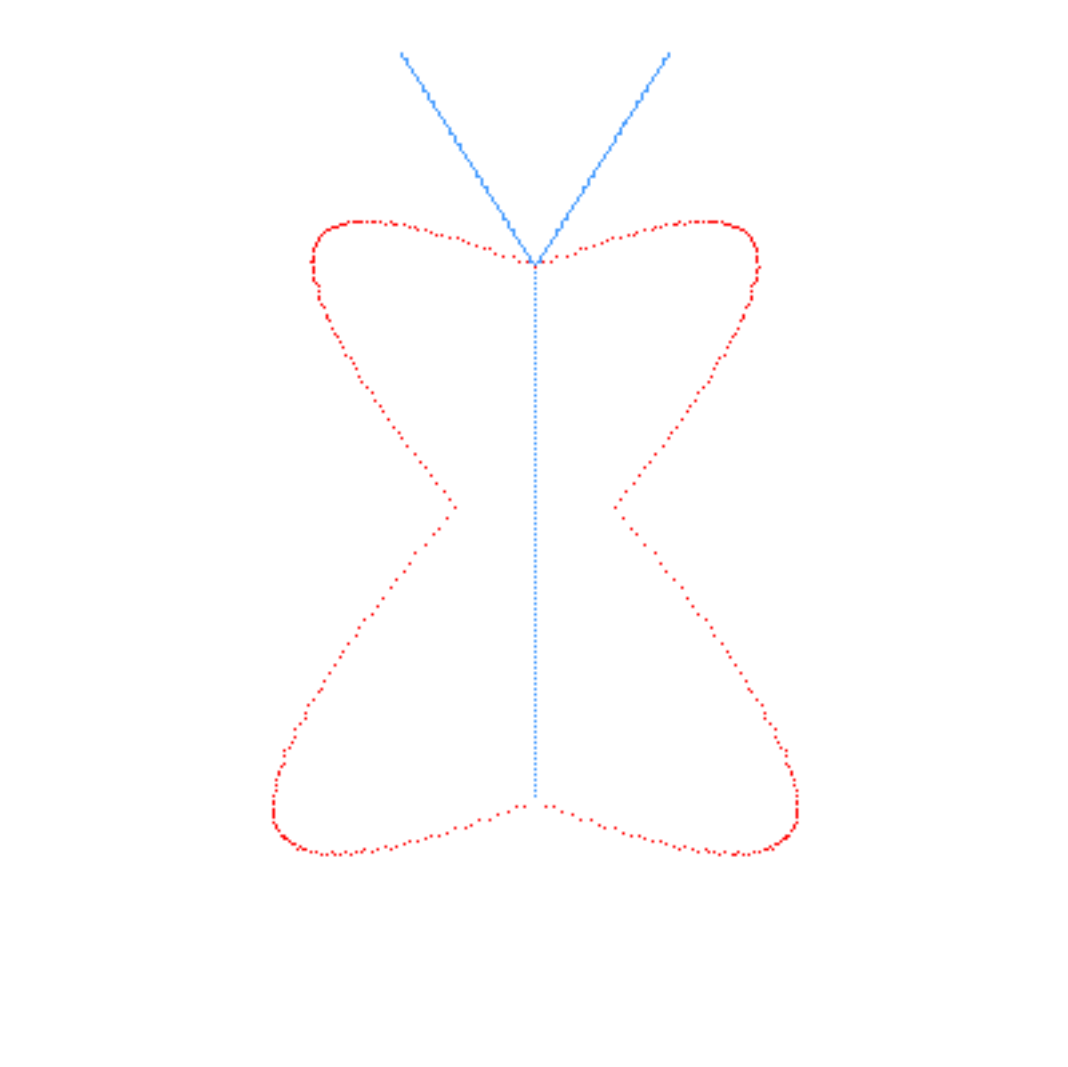
# Lab 7: num_t = 200



# Lab 7: num_t = 1000



# Lab 7: Bézier butterfly



# Lab 7: Bézier curve code

```
# returns the Point on the Bezier line between p0 and p1
def bezier_line(t, p0, p1):
    x = (1-t)*p0.x + t*p1.x
    y = (1-t)*p0.y + t*p1.y
    return Point(x, y)
```

# Lab 7: Bézier curve code

```
# returns the Point on the Bezier line between p0 and p1
def bezier_line(t, p0, p1):
    x = (1-t)*p0.x + t*p1.x
    y = (1-t)*p0.y + t*p1.y
    return Point(x, y)
```

```
# returns the Point on the Bezier curve
# with control points p0,p1,p2
def bezier_quad(t, p0, p1, p2):
    q0 = bezier_line(t, p0, p1)
    q1 = bezier_line(t, p1, p2)
    return bezier_line(t, q0, q1)
```

# Lab 7: cubic Bézier curve

```
# returns the Point on the Bezier curve
# with control points p0,p1,p2,p3
def bezier_cubic(t, p0, p1, p2, p3):
```

??

# Lab 7: cubic Bézier curve

```
# returns the Point on the Bezier curve
# with control points p0,p1,p2,p3
def bezier_cubic(t, p0, p1, p2, p3):
    q0 = bezier_quad(t, p0, p1, p2)
    q1 = bezier_quad(t, p1, p2, p3)
```

# Lab 7: cubic Bézier curve

```
# returns the Point on the Bezier curve
# with control points p0,p1,p2,p3
def bezier_cubic(t, p0, p1, p2, p3):
    q0 = bezier_quad(t, p0, p1, p2)
    q1 = bezier_quad(t, p1, p2, p3)
    return bezier_line(t, q0, q1)
```

# num_t = 25, connecting points