Assignment 3

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# Part 0

**Ray\_sphere\_intersection:**

Utilizing formula: quadratic equation a\*x^2 + B\*x + c = 0, we can get the delta is. Since would always give us the smallest number to intersect which we do not check the .

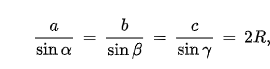
**Ray\_parallelogram\_intersection:**

Utilizing Assignment 2 and incremented the p and N we would get the solution for the ray\_parallelogram\_intersection

# Part 1

**Field of View and Perspective Camera**

Utilizing laws of sins indicated below we get the correct value for (image\_y in the code)

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# Part 2

**Shadow Rays:**

Find the nearest value for the nearest object and check the light position to see if it is visible within the range

# Part 3:

**Reflection：**

Utilizing formula: r = 2n(n·v)-v compare the answer for linear and cubics

**Perlin Noise：**

Linear = a0+ w\* (a1-a0)

Cubic = (a1 - a0) \* (3.0 - w \* 2.0) \* w \* w + a0

Overall, this assignment consists with different equations and apply them ton actual code.