

$$P = O + (\hat{d} \cdot \vec{x}) \hat{d}$$

$$m = \sqrt{r^2 - (\hat{d} \cdot \vec{x})^2}$$

hit - miss

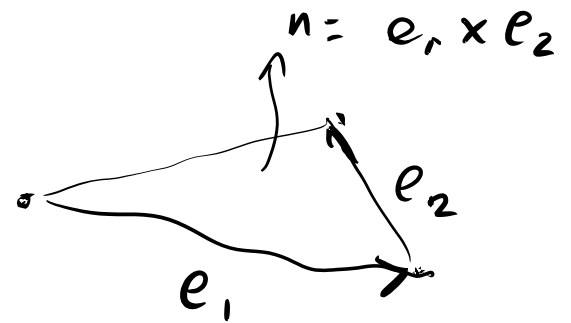
$$\vec{n} = O + \text{dist} \hat{d} - c$$

$$\boxed{\text{dist}} = \hat{d} \cdot \vec{x} - m$$

Triangles

✓ 1. ray-plane

2. check if inside



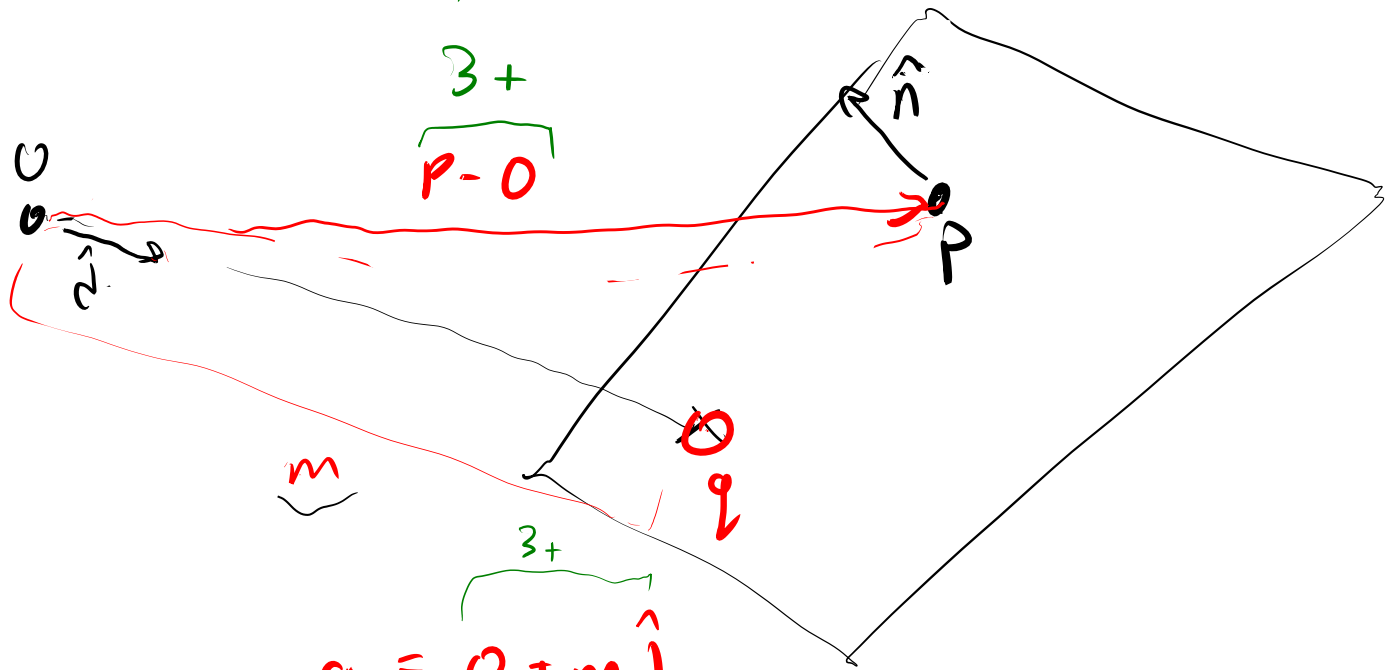
+ 10

* 9

/ 1

$$m = \frac{\overbrace{(P-O) \cdot \hat{n}}^{3 \times 2+}}{\underbrace{\hat{d} \cdot \hat{n}}_{3 \times 2+}} - \text{dist from plane}$$

$$- \text{dist from ray } \hat{d}$$



$$Q = O + m \hat{d}$$

3x

$$(V_2 - V_0) \times \hat{n} = \vec{t}_1$$

$$\vec{e}_1 = \frac{\vec{t}_1}{\vec{t}_1 \cdot (V_1 - V_0)}$$

$$\vec{x} \cdot \vec{e}_1 = b_1$$

Barycentric
Coordinates

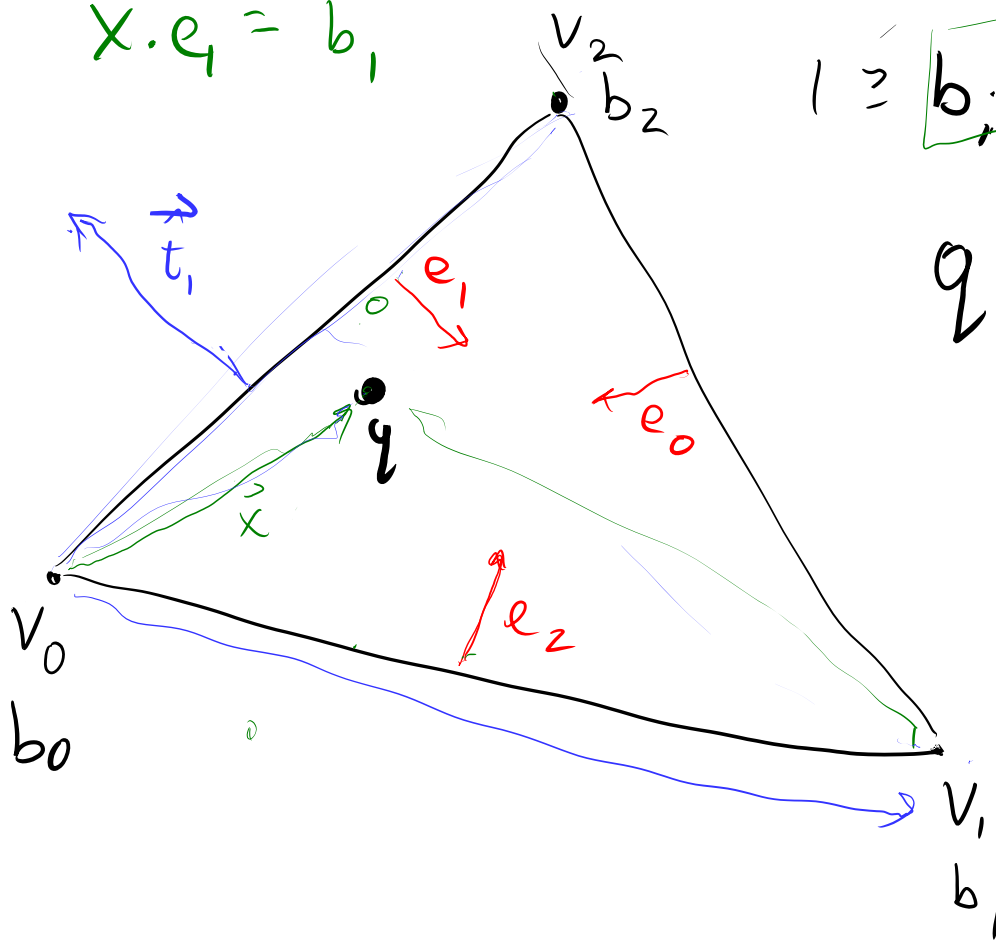
$$b_0 + b_1 + b_2 = 1$$

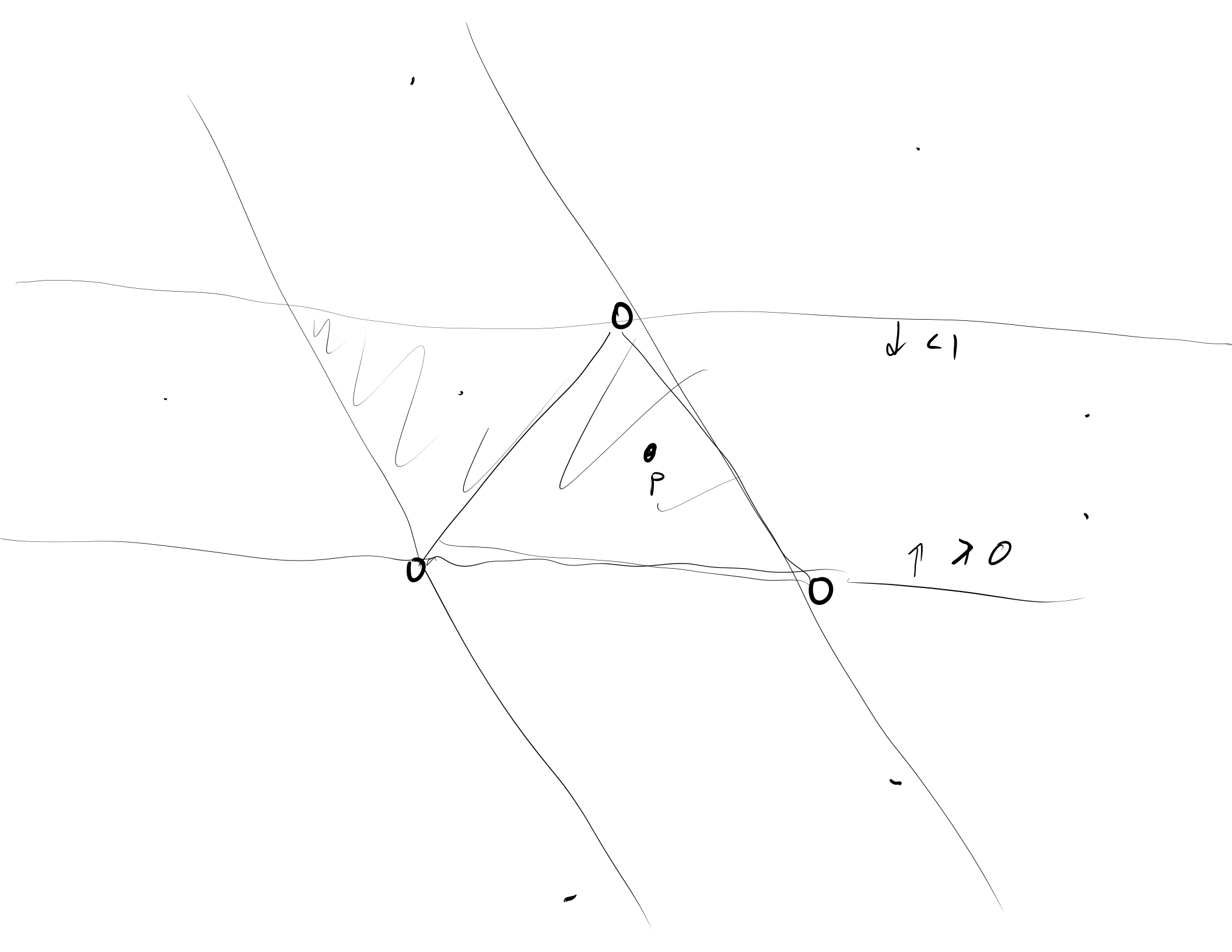
$$1 \geq b_i \geq 0$$

$$q = b_0 V_0 + b_1 V_1 + b_2 V_2$$

* Pixel
* aa
* obj

22 +
18 *
1 /





for x

for y

Shadows

create ray

for obj
intersect

nearest:

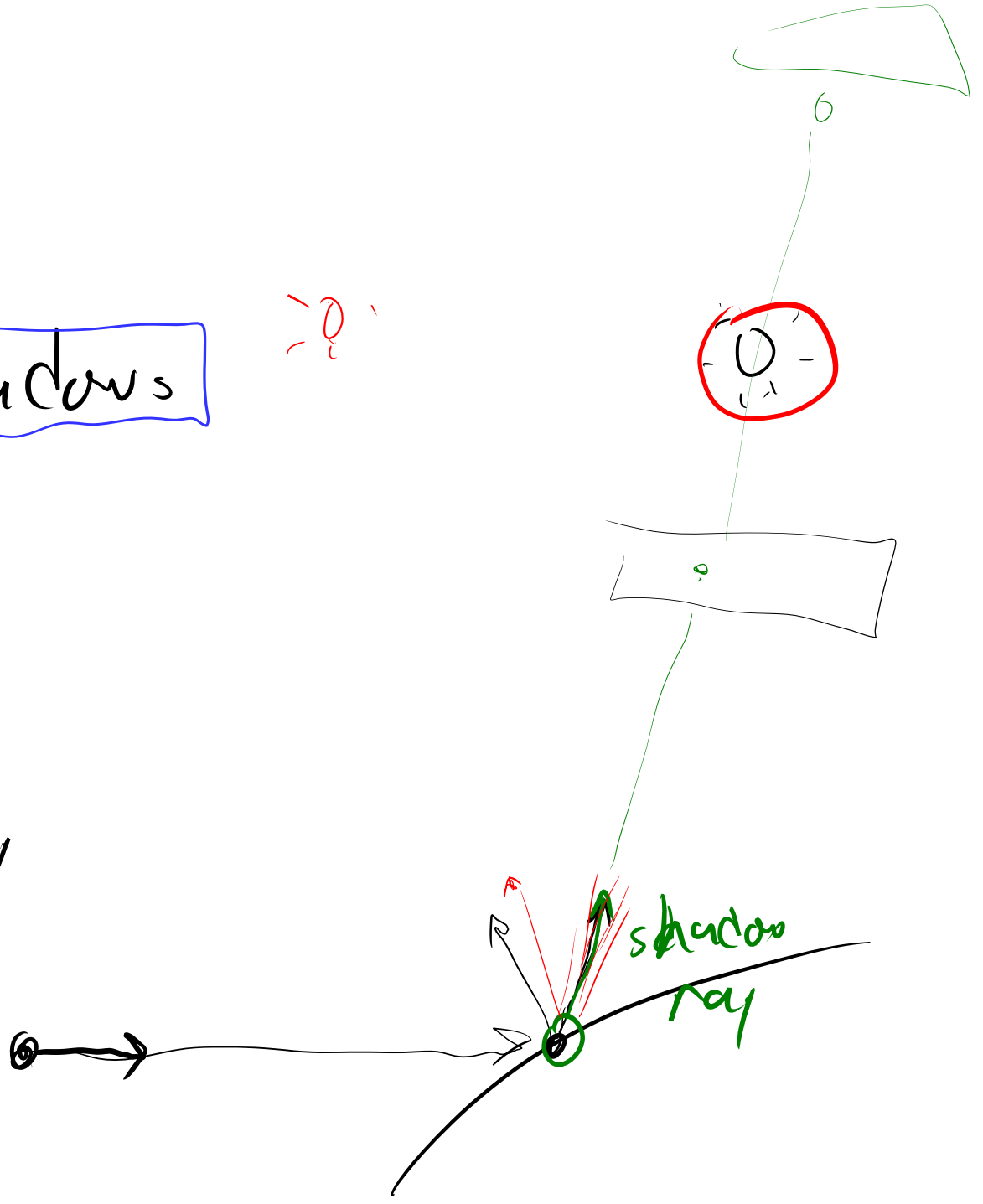
for light

create shadow ray

for obj
intersect

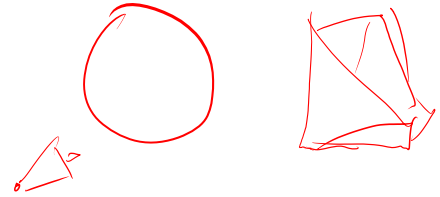
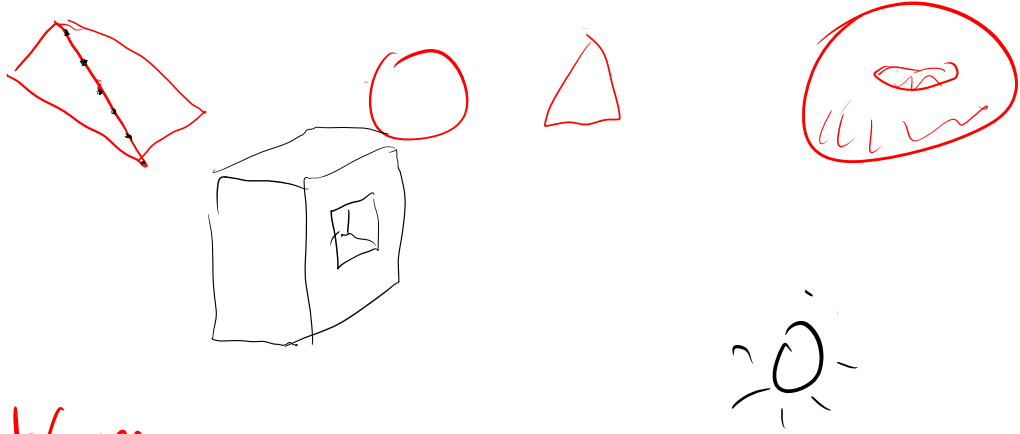
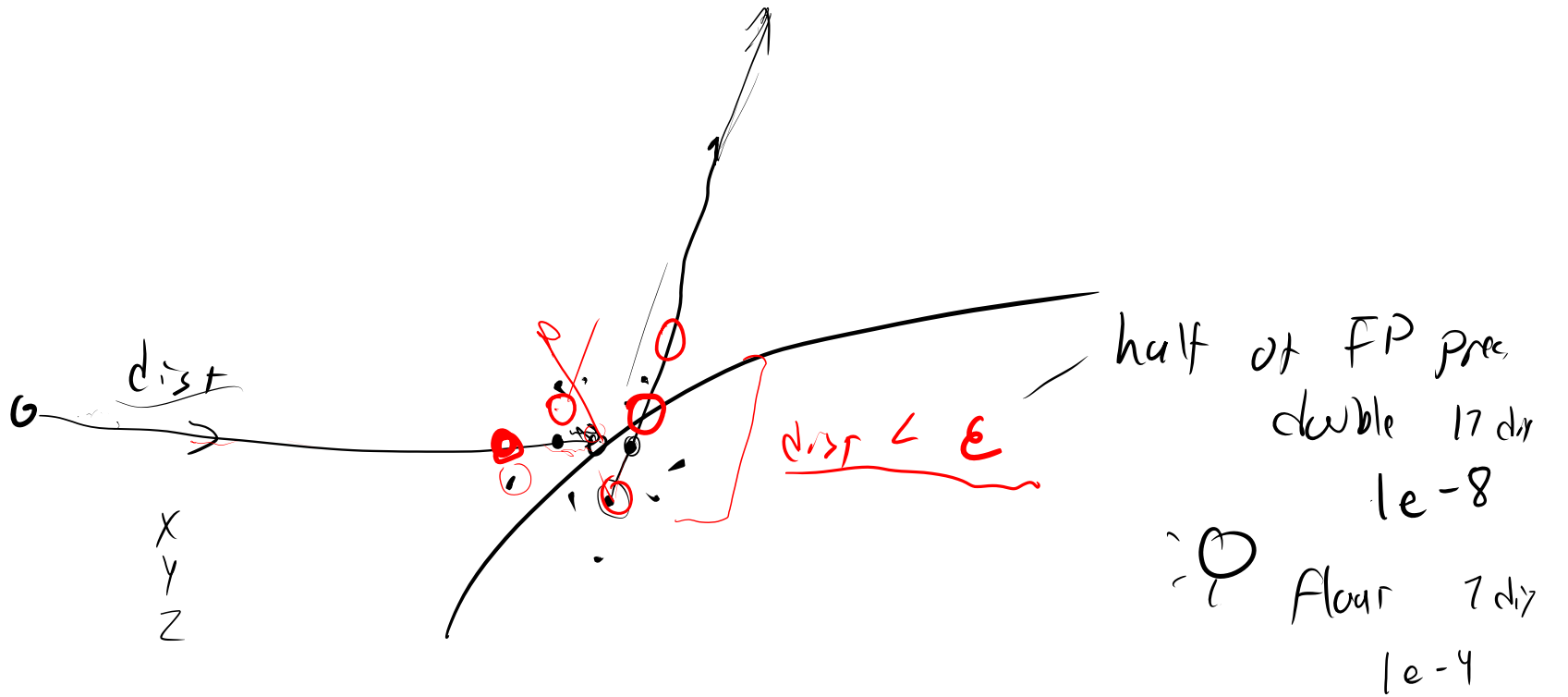
if newer:
skip

else
light



Fixes

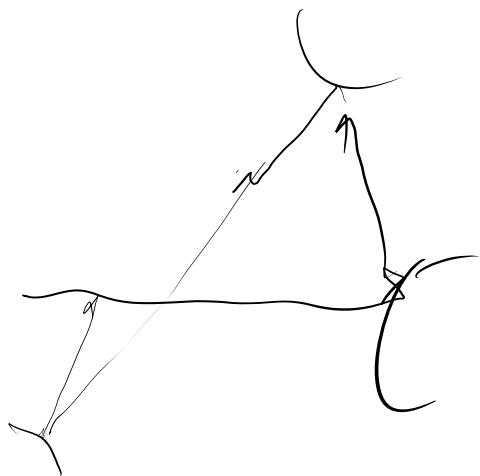
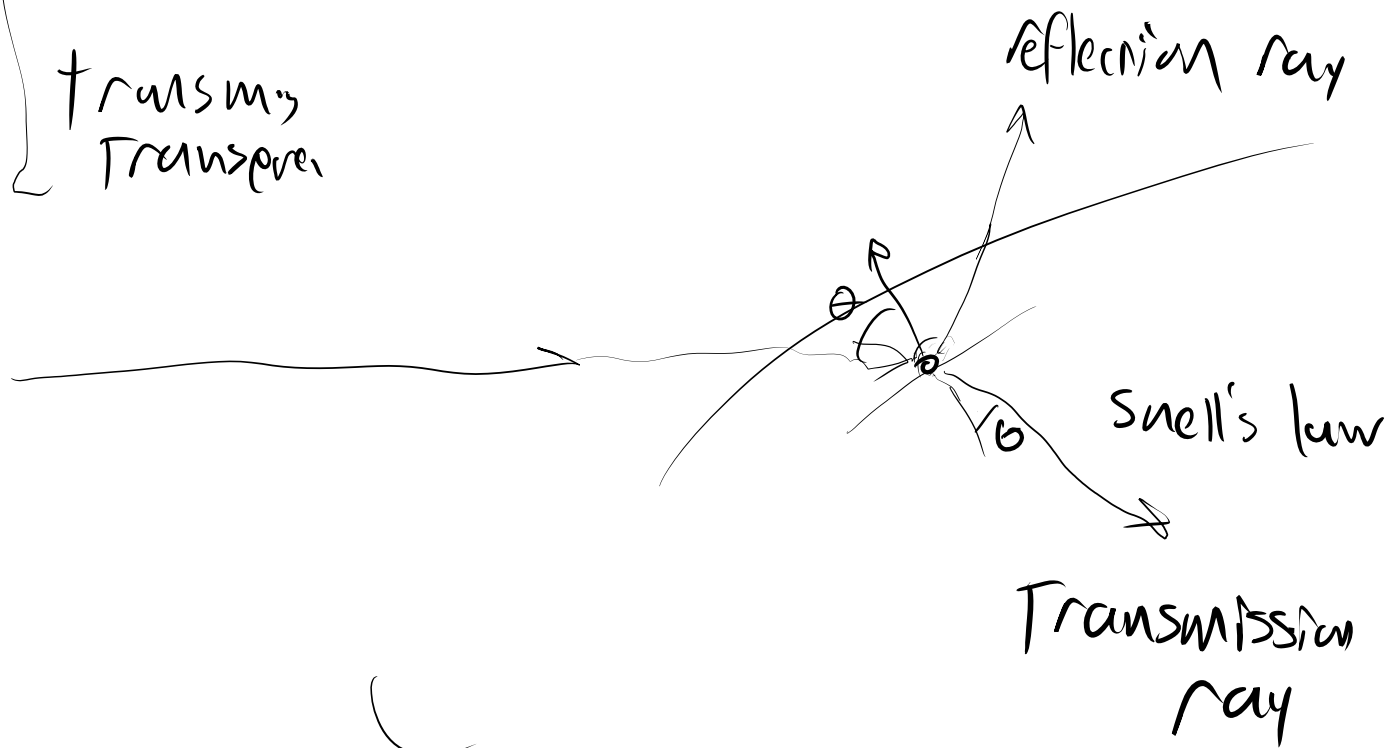
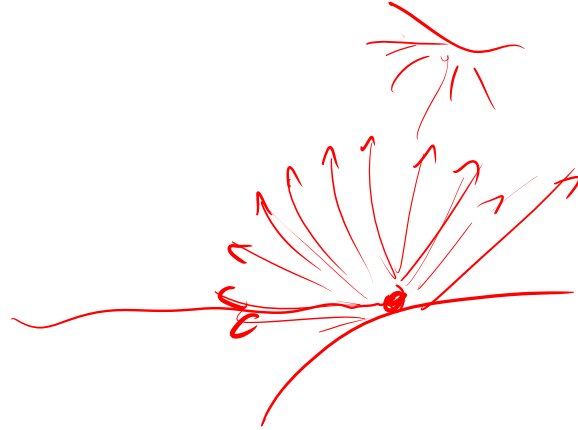
1. backfaces
2. fudge ←
3. ignore this object



color { direct light
Blinn-Phong
Lambert
Shadow ray

color { shiny
glossy

color { transmiss
Transparen



global
illumination

due date

3w

HW 1

2w

HW 2

3 week

HW 3

images

-

shadows