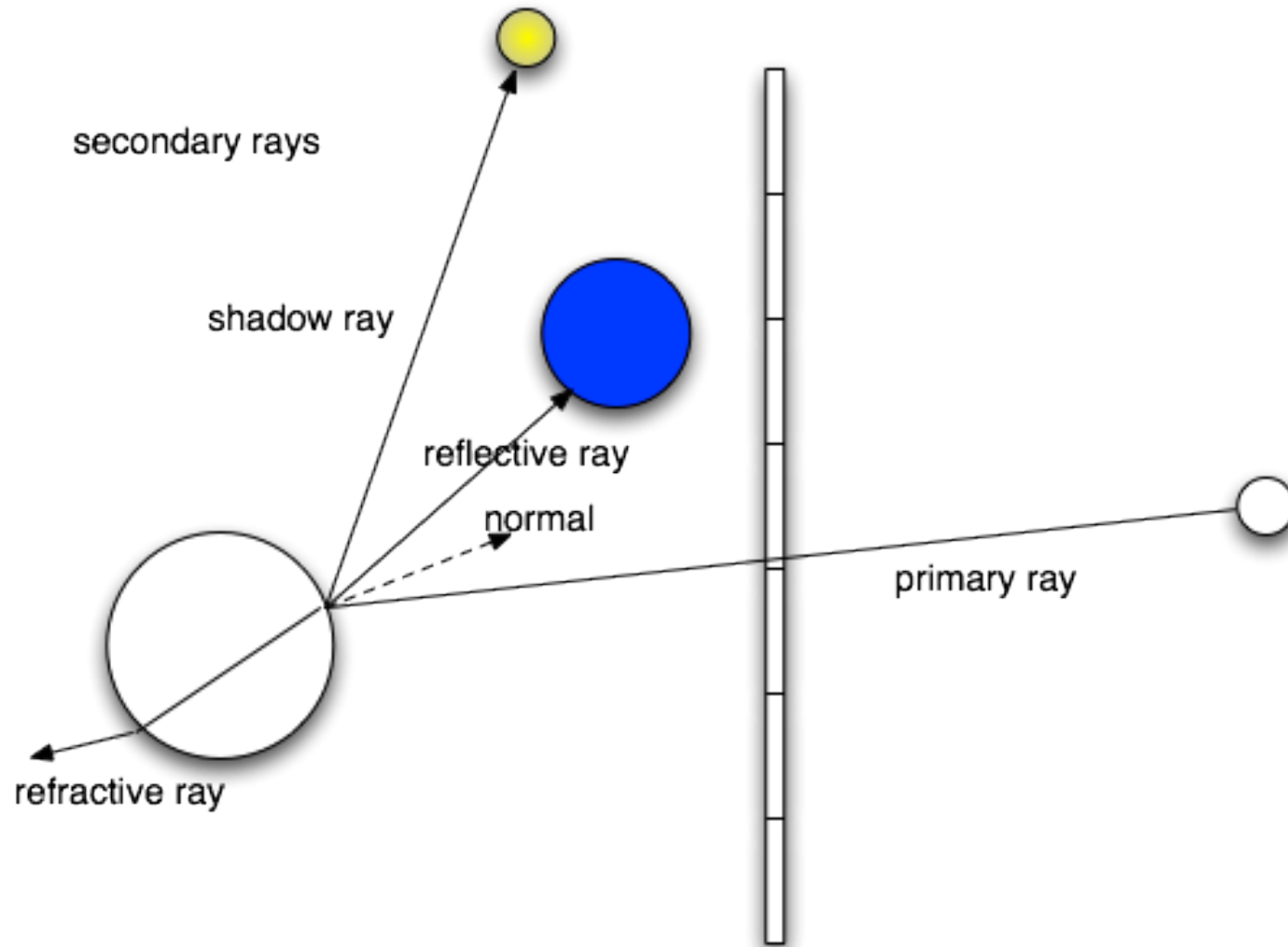


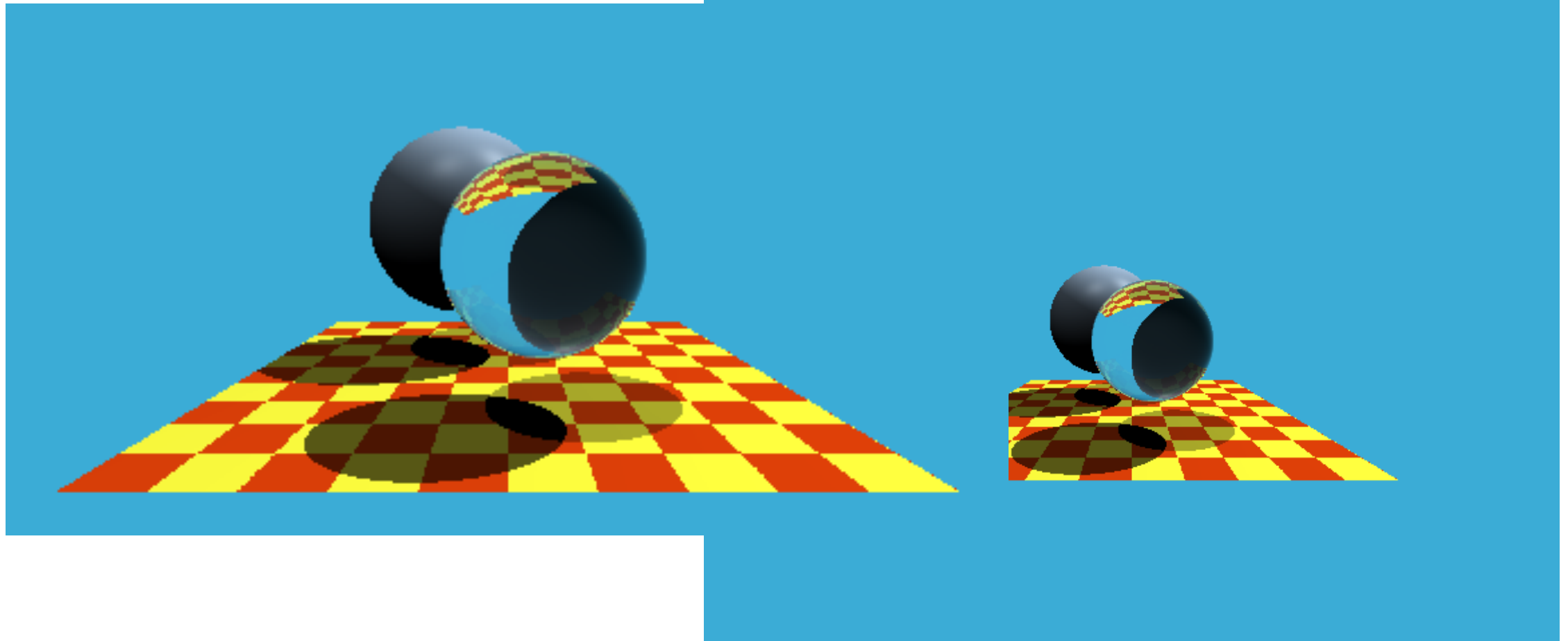
CMSC427

Ray-surface intersection

Ray tracing - review

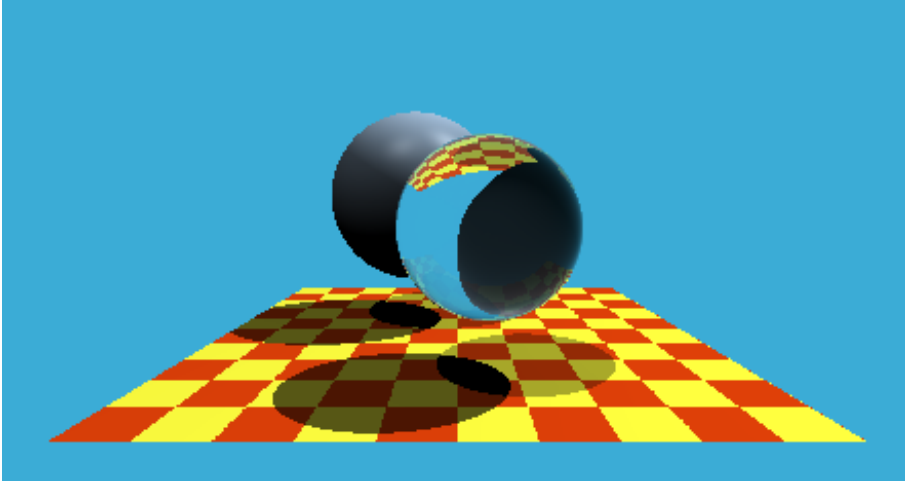


Ray tracing – Scratchpixel code (600 lines)



<https://www.scratchapixel.com/code.php?id=8&origin=/lessons/3d-basic-rendering/ray-tracing-overview&src=0>

Ray tracing – blending

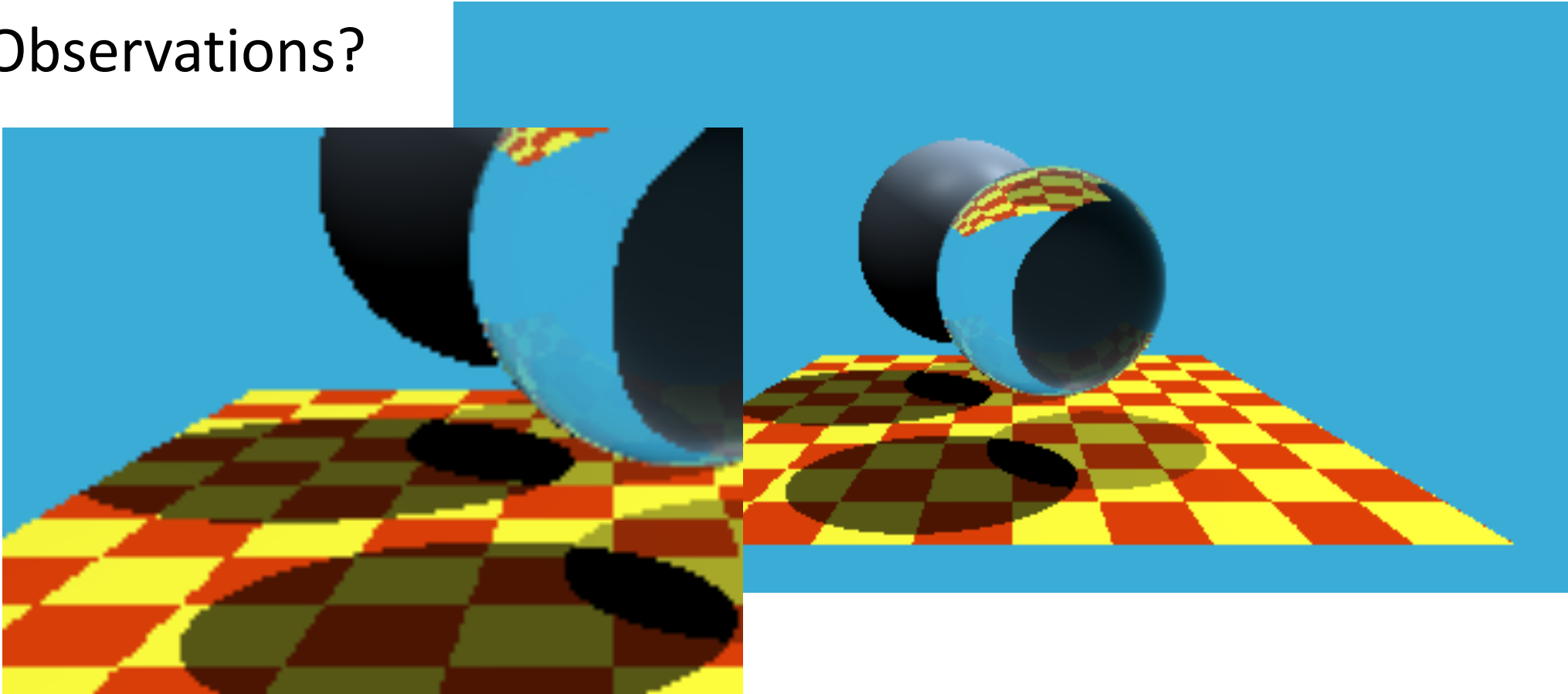


```
switch (hitObject->materialType) {  
    case REFLECTION_AND_REFRACTION:  
        { // Return reflection * fresnel +  
            refraction * (1-fresnel)  
        }  
    case REFLECTION:  
        { // Return reflection ray  
    default: //DIFFUSE  
        { // Standard equation  
  
        // No object hit - background
```

<https://www.scratchapixel.com/code.php?id=8&origin=/lessons/3d-basic-rendering/ray-tracing-overview&src=0>

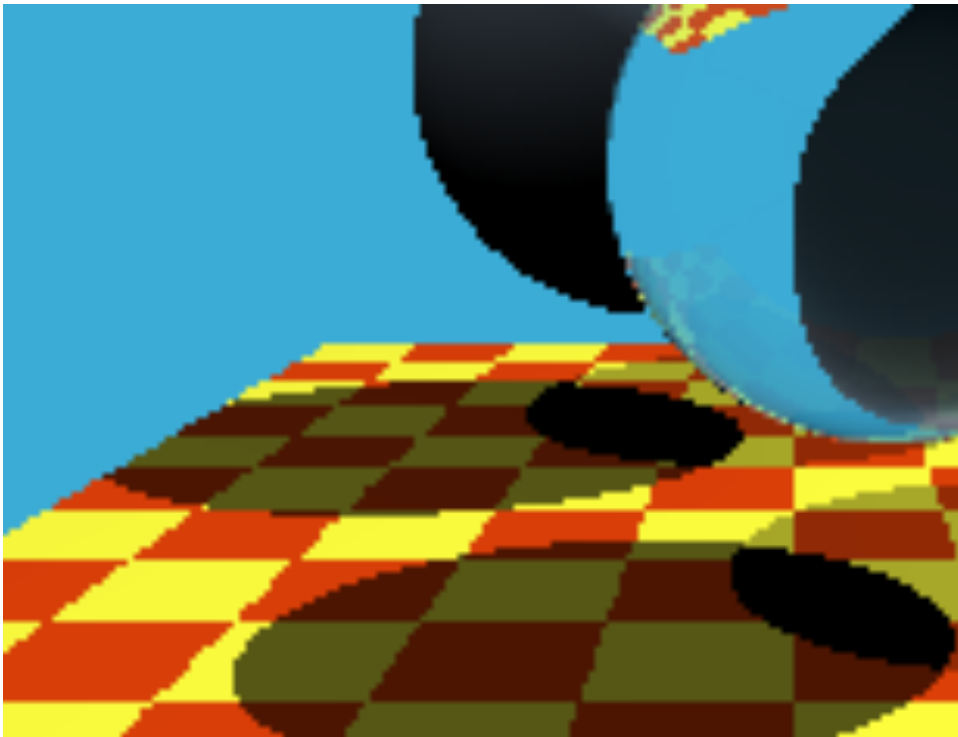
Ray tracing – Scratchpixel code (600 lines)

Observations?



Ray tracing – Scratchpixel code (600 lines)

Observations?



No caustics



Ray – object intersections

- Ray-sphere
 - Ray-plane
 - Ray-disc
 - Ray-triangle
 - Ray-box
 - Ray-cylinder
-
- Side note: alternative use to determine hit of bounding box/sphere

Ray – sphere. Hit computation alone

- Done last class. Does ray hit sphere, yes/no?
- Distance from ray to sphere

Ray – sphere. Hit point computation

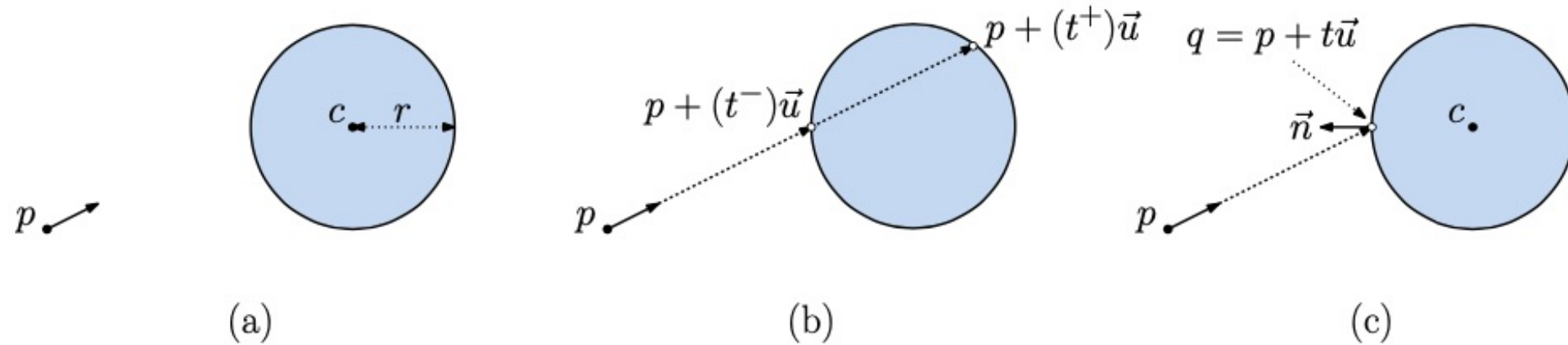
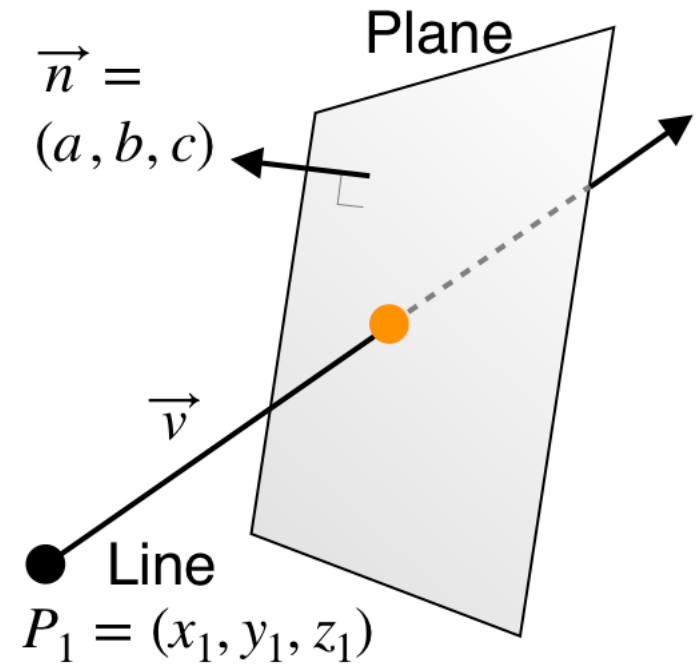
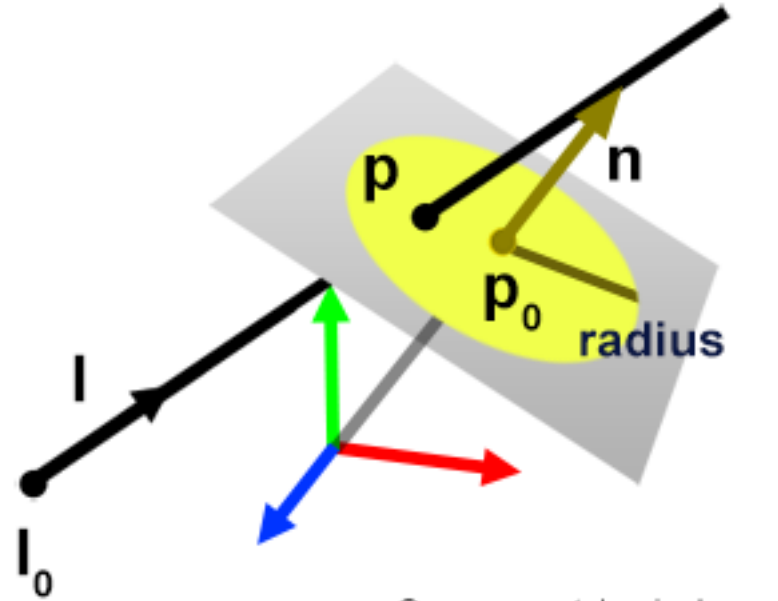


Fig. 1: Ray-sphere intersection.

Ray – plane

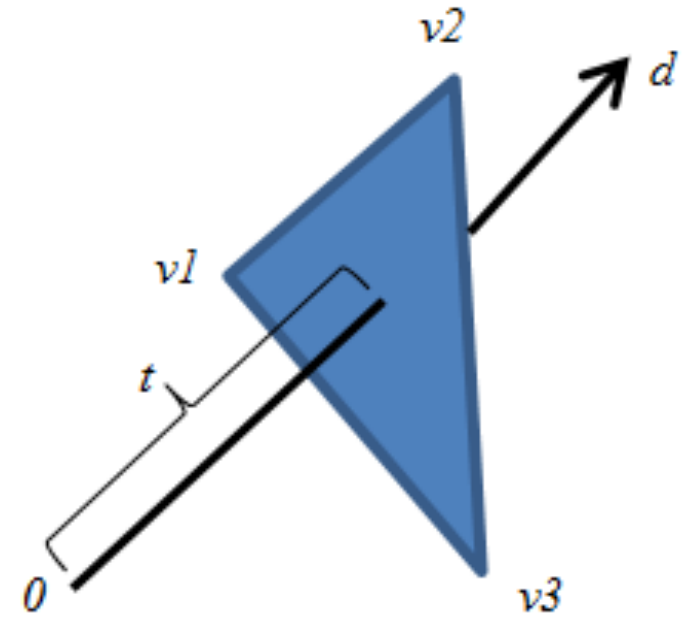


Ray – disc

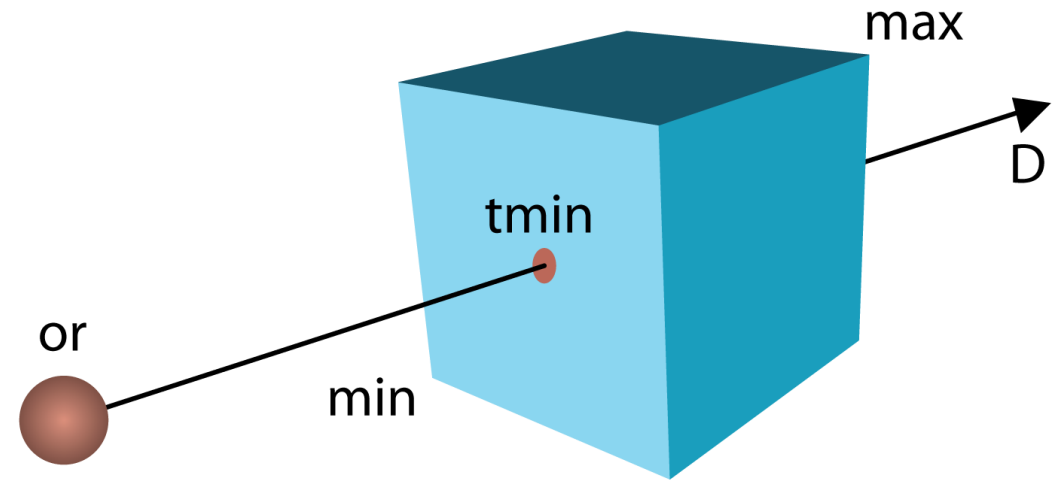


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Ray – triangle



Ray – box



Ray – cylinder

