

Student Name: _____

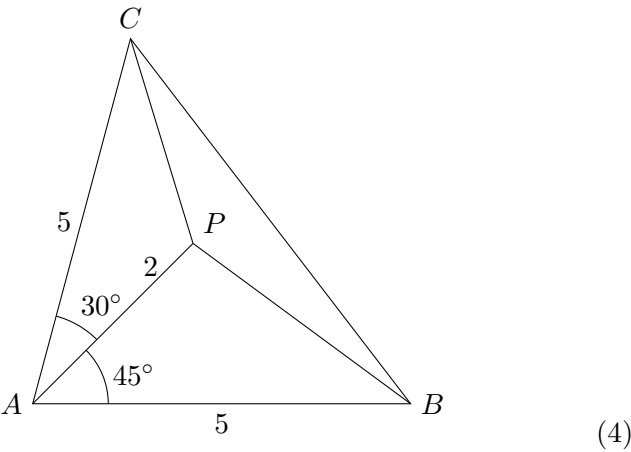
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1. a) What happens if we shoot rays from light sources instead of the eye? (2)

b) For a 3840×2160 resolution image, how many rays should be cast (at least) for a ray-traced image? (2)

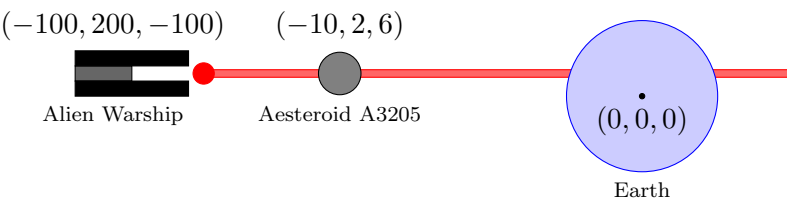
c) During calculations, how do we ensure that we take the closest intersection? (2)

2. a) In the triangle ABC what is the barycentric coordinates (α, β, γ) of point P ?
 $AB = AC = 5$ and $\angle CAP = 30^\circ, \angle PAB = 45^\circ$.
(Hint: $\text{area} = \frac{1}{2}ab \sin \theta$)



b) If the vertices A , B and C are to be coloured red (255, 0, 0), green (0, 255, 0) and blue (0, 0, 255) respectively, what would be the interpolated colour of P in RGB? (2)

3. a) A highly aggressive alien race shot their laser canon towards earth. It already destroyed the aesteroid A3205 in the solar system. Will earth survive? Radius of earth is 6400 KM. All units in 10^6 meters.



(4)

b) If earth survives, by how far did the laser miss? If not, at what distance from the Alien Warship did the laser hit earth?

(2)

4. For your hard work and attending the exam so early in the morning.

(2)