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| **A** | Computer Graphics test – 2016.05.20. |  |

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| **Name:** | **NEPTUN:** | **Signature:** |  |  |

1. How do you compute the intersection of a ray and a sphere? (5 points)
2. Explain what the following OpenGL function does:

glTexParameteri(GL\_TEXTURE\_2D, GL\_TEXTURE\_MIN\_FILTER, GL\_LINEAR); (5 points)

1. The rasterization unit gets a triangle with vertices: (20, 20, 0), (40, 20, 0.5), (40, 40, 1) in screen coordinates. What would the result of the **backface culling** test be if front faces are defined with clock-wise order of vertices? (2 points) What is the difference between the computed *z* values of pixels (30, 21) and (31, 21)? Hint: Triangle setup. (8 points).
2. Write a program in GLSL or in C++ that decides whether a 2D point **v** is inside the triangle of vertices **p1, p2, p3**. (10 points).