

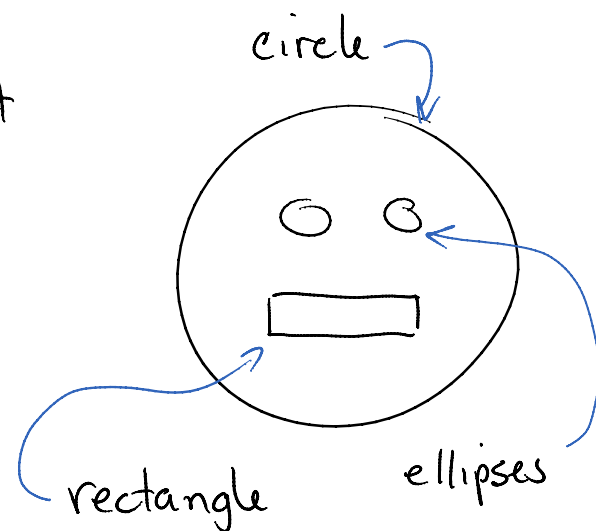
① Prove or demonstrate that SLerp generates unit quaternions of unit length for all $\alpha \in [0, 1]$

$$h(\alpha) = \frac{\sin((1-\alpha)\phi)}{\sin\phi} h_0 + \frac{\sin(\alpha\phi)}{\sin\phi} h_1$$

where $h_0 \neq h_1$ are ^{different} unit quaternions

$$\text{and } \phi = \cos^{-1}(h_0 \cdot h_1)$$

② Construct a semi-algebraic set representation of the "face" to the right using geometric primitives and logical operations



③ Lavalley problem 2.18. Submit your solution as matlab code. Comments must give instructions for testing.

④ Lavalle problem 2.21. Same submission instructions.