

# Complementary Solutions to Hermite's Problem

## HAPD Algorithm

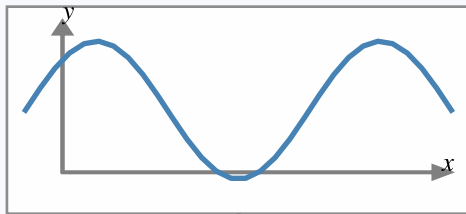
Non-subtractive approach

- Projective space  $\mathbb{RP}^2$
- Matrix-based approach
- Standard floor function

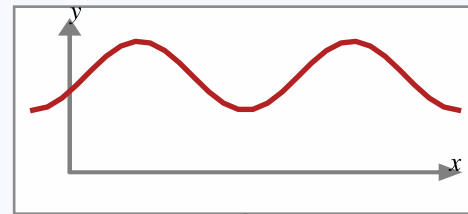
## Modified $\sin^2$ Algorithm

Subtractive approach

- Complex plane analysis
- Transcendental terms
- Phase-preserving floor



Projective dynamics



$\sin^2$ -weighting

## Common Properties

- Periodic precisely for cubic irrationals
  - Handle complex conjugate roots