

## Solutions to Quiz 2

Convert the following equation to a system of equations with integer coefficients using the methods given in class.

$$\pi x + y/(\sqrt{3} + 1) + z^3 = 3$$

- Since  $\pi$  is transcendental we can replace it with a variable  $t$ .
- Since  $\sqrt{3}$  is algebraic we can replace it with a variable  $u$  such that  $u^2 = 3$ .
- Since  $\sqrt{3}+1$  needs to be invertible we need a variable  $v$  such that  $v(u+1) = 1$ .

$$tx + vy + z^3 - 3 = 0$$

$$u^2 - 3 = 0$$

$$v(u + 1) - 1 = 0$$