

## Find the cubic!

1. What is the result of expanding the expression  $(x + y)^3$ ?
2. What is the result of expanding the expression  $(x - y)^3$ ?
3. How can you express  $x^3 + y^3$  in terms of  $x + y$  and  $xy$ ?
4. How can you express  $x^3 - y^3$  in terms of  $x - y$  and  $xy$ ?
5. Find a polynomial with the smallest degree possible which has  $\sqrt[3]{2} + \sqrt[3]{4}$  as a root.  
(Hint: Try cubing it out like in the first problem!)
6. (\*) Can you find the other roots of the polynomial you found in the previous problem?
7. Find an equation which has  $\sqrt[3]{u} + \sqrt[3]{v}$  as a root.