MATH 322 **Quiz 1** Monday, February 10

Name: _____

1. Find the degrees of field extensions, and briefly explain (using polynomials). Then give a basis for each larger field over the smaller field.

   (a) $[\mathbb{Q}(\sqrt{2}) : \mathbb{Q}]$

   (b) $[\mathbb{Q}(\sqrt{2}, \sqrt[3]{5+\sqrt{2}}) : \mathbb{Q}(\sqrt{2})]$

   (c) $[\mathbb{Q}(\sqrt{2}, \sqrt[3]{5+\sqrt{2}}) : \mathbb{Q}(\sqrt[3]{5+\sqrt{2}})]$

   (d) $[\mathbb{Q}(\sqrt[3]{5+\sqrt{2}}) : \mathbb{Q}]$