Name: _____ **Algebra II**
Date: **Quiz 4**

Problem 1. Simplify and factor completely.

$$\sqrt{x^5 - x^4} - \sqrt{16x - 16}$$

Problem 2. Simplify.

$$\sqrt[3]{y^4}\sqrt[3]{16y^5}$$

Problem 3. First write as one single radical. Then simplify if possible.

$$(x^3)^{\frac{1}{2}}(xy^2)^{\frac{1}{3}}(x^2y^3)^{\frac{1}{6}}$$

Problem 4. Compute. For full credit write your answer in reduced form.

$$\left(\frac{1}{2} + i\frac{\sqrt{3}}{2}\right)^2$$

Problem 5. Write in the form $a + ib$. Be sure to show your work!

$$\frac{1}{2 - 3i}$$

Problem 6. Write in the form $a + ib$. Be sure to show your work!

$$\frac{\sqrt{2} - 3i}{2 - i\sqrt{3}}$$

Problem 7. Write in the form $a + ib$. Be sure to show your work!

$$\frac{x + iy}{u + iv}$$

Extra Credit. Compute

$$\sqrt{2 + \sqrt{2 + \sqrt{2 + \dots}}}$$