Exam 2a Intermediate Algebra 2 804-203 **Spring 2009**

Name _____ **/100**

Each problem is worth 10 points.

Simplify the following using only positive rational exponents:

1. $\dfrac{(4x^{-5}y^{-3})^{-2}\cdot(\frac{1}{2}x^{-3}y^{\frac{1}{3}})^{-3}}{x^{4}y^{-5}}$ = _____

2. $(a^{-1}+b^{-1})^{-1}$ = _____

3. $\left(-27\right)^{-\frac{2}{3}}$ = _____

4. Express the following numbers in scientific notation as numbers between 1 and 10 times the appropriate power of 10.

a) $7,342,285$ = _____

b) 0.000205×10^{-6} = _____

c) $\dfrac{(200{,}000{,}000)\cdot(3.5\times10^{-12})}{4.00\times10^{-4}}$ = _____

5. Express the following using only positive rational exponents.

a) $\sqrt[4]{a^{8}+b^{8}}$ = _____

b) $\sqrt[7]{x^{2}}$ = _____

Simplify the following expressing all answers in **simplest radical form**. To earn a full 10 points, you must state the answer with a rationalized denominator. **Assume** for **even** roots that all **variables** represent **positive** numbers.

6. $\sqrt{\frac{125}{8x^5}}$ = _____

7. $\frac{1}{\sqrt[3]{-16x^6y^5}}$ = _____

8. $\frac{20}{2-\sqrt{2}} - 2\sqrt{50}$ = _____

9. Simplify the following complex number, expressing the result in standard $(a + bi)$ form .

$\frac{9+\sqrt{-81}}{3+2i} - (\sqrt{25} - \sqrt{-16})$ = _____

10. Find all real solutions of the following equation. $\sqrt{x+9} - \sqrt{x-24} = 3$