Algebra 201-007-50 C1
Quiz 5
October 2, 2008

Name: SOLUTIONS

Student Number:

1. *(10 marks).* Simplify, expressing the answers with positive exponents only:

a)

$$\left(\frac{3x^{-2}y^{-20}}{2^{-3}x^{6}y^{-5}}\right)^{-2}$$

$$= \left(\frac{2^{-3}x^{6}y^{-5}}{3x^{-2}y^{-20}}\right)^{2} = \frac{(2^{-3})^{2}(x^{6})^{2}(y^{-5})^{2}}{(3)^{2}(x^{-2})^{2}(y^{-20})^{2}}$$

$$= \frac{2^{(-3)(2)}x^{6\cdot 2}y^{(-5)(2)}}{9\,x^{(-2)(2)}y^{(-20)2}} = \frac{2^{-6}x^{12}y^{-10}}{9x^{-4}y^{-40}}$$

$$= \frac{x^{12}x^{4}y^{40}}{2^{6}\cdot 9\,y^{10}} = \frac{x^{12+4}y^{40-10}}{576}$$

$$= \frac{x^{16}y^{30}}{576}$$

b)

$$\frac{(a^{-2}b^3)^{-4}}{(a^{-3}b^2)^{-2}(ab)^{-4}}$$

$$= \frac{(a^{-3}b^2)^2(ab)^4}{(a^{-2}b^3)^4} = \frac{a^{-6}b^4a^4b^4}{a^{-8}b^{12}}$$

$$= \frac{a^8b^4a^4b^4}{a^6b^{12}} = \frac{a^{8+4}b^{4+4}}{a^6b^{12}}$$

$$= \frac{a^{12}b^8}{a^6b^{12}} = \frac{a^6}{b^4}$$