

MATH 1090-8: QUIZ #1 SOLUTIONS<sup>1</sup>

no calculators allowed!

August 30, 2007

1. Use the properties of exponents to write the following expression using only positive exponents:

$$\frac{a^{1/2}}{a^{-3/2}}$$

**Solution.** We have

$$\frac{a^{1/2}}{a^{-3/2}} = a^{(1/2)-(-3/2)} = a^{1/2+3/2} = a^2.$$

2. Perform the indicated operations and simplify:

$$\frac{8a - 16}{a - 3} \cdot \frac{4a - 12}{3a - 6}.$$

**Solution.** We have

$$\frac{8a - 16}{a - 3} \cdot \frac{4a - 12}{3a - 6} = \frac{8(a - 2)}{a - 3} \cdot \frac{4(a - 3)}{3(a - 2)} = \frac{8}{1} \cdot \frac{4}{3} = \frac{32}{3}.$$

3. Solve the following equation for  $a$ :

$$2(a - 7) = 5(a + 3) - a.$$

**Solution.** We first simplify both sides to get

$$2a - 14 = 5a + 15 - a$$

or

$$2a - 14 = 4a + 15.$$

Bring the  $2a$  to the right-hand side (as  $-2a$ ) and the  $15$  to the left-hand side (as  $-15$ ) to get

$$-14 - 15 = 4a - 2a$$

or

$$-29 = 2a.$$

Dividing both sides by  $2$  we obtain

$$a = -\frac{29}{2}.$$

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<sup>1</sup>There were four versions of this quiz distributed in class. They were all identical except that the variable names on each version were different: some had  $a$ 's, others  $x$ 's,  $y$ 's, or  $z$ 's. This was done to identify students who copied off their neighbor's quiz.