

# Math 206 - Quiz 1

February 5, 2014

Name key

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary. DO NOT USE A CALCULATOR FOR ANY PART OF THIS QUIZ.

1. (1 point) Steve thinks he has discovered a method to find the exact decimal form of certain square roots. Using his method, he finds that

$$\sqrt{3} = 1.7320508. \quad \leftarrow \text{THIS IS PRETTY CLOSE, BUT NOT CORRECT.}$$

Do you think Steve's method works? Explain.

STEVE'S METHOD TO COMPUTE  $\sqrt{3}$  CANNOT BE CORRECT.

$\sqrt{3}$  IS IRRATIONAL. ITS DECIMAL FORM NEITHER REPEATS NOR TERMINATES.

2. (1 point) Laurie "did the math" and found that

$$\frac{3}{17} = 0.\overline{17647058823529413}$$

Explain how you know that Laurie must be wrong.

LAURIE'S REPETEND HAS 17 DIGITS. THE REPETEND OF

$\frac{3}{17}$  CANNOT EXCEED 16 DIGITS.

3. (1 point) Give an example of an irrational number whose decimal form contains only the digits 3, 1, and 4.

3.1414414441444...

4. (2 points) One number below has a terminating decimal form, one has a repeating decimal form, and one has a non-repeating, non-terminating decimal form. Without attempting to compute the decimal forms, explain which is which and how you know.

$\sqrt{8}$   
SINCE 8 IS NOT A PERFECT SQUARE,  $\sqrt{8}$  IS IRRATIONAL. ITS DECIMAL FORM NEITHER REPEATS NOR TERMINATES.

$\frac{27}{96} = \frac{9}{32}$   
 $\uparrow$   
 $32 = 2^5$   
PRIME FACT. OF DENOM. CONSISTS OF ONLY 2'S.  
THE DECIMAL FORM OF  $\frac{9}{32}$  TERMINATES.

$\frac{33}{90} = \frac{11}{30}$   
 $\uparrow$   
 $30 = 2 \cdot 3 \cdot 5$   
PRIME FACT. OF DENOM. HAS A 3.  
THE DECIMAL FORM OF  $\frac{11}{30}$  REPEATS.