Math 206 - Quiz 1
January 21, 2015

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) Write the decimal number 35.1679 in expanded form.

$3\times10^{1} + 5\times10^{0} + 1\times10^{-1} + 6\times10^{-2} + 7\times10^{-3} + 9\times10^{-4}$

2. (1 point) Write the fraction $\frac{17}{125}$ as an equivalent fraction whose denominator is a power of ten. Then use your result to write the fraction's equivalent decimal form.

$$\frac{17}{125}\times\frac{8}{8} = \frac{136}{1000} = 0.136$$

$$\begin{array}{r} {\scriptstyle 5}\\ 17\\ \times\ 8\\ \hline 136 \end{array}$$

3. (1 point) Does the fraction $\frac{27}{180}$ have a terminating decimal form? Explain.

$$\frac{27}{180} = \underbrace{\frac{3}{20} = \frac{3}{4\cdot5} = \frac{3}{2^2\cdot5}}\cdot\frac{5}{5} = \frac{15}{100} = 0.15$$

FRACTION IS IN LOWEST TERMS.

PRIME FACTORIZATION OF DENOM HAS ONLY 2'S AND 5'S.

DECIMAL FORM TERMINATES.

4. (1 point) By doing long division, Sam found that

$$\frac{9}{19} = 0.\overline{4736842105263157894}.$$

What do you think about Sam's result?

SAM'S RESULT MUST BE INCORRECT, BECAUSE THE REPETEND CANNOT HAVE MORE THAN 18 DIGITS. SAM'S RESULT HAS A 19-DIGIT REPETEND.

5. (1 point) Give an example of an irrational number whose decimal form contains only the digits 0 and 9.

$0.909900999000099990000\ldots$

6. (Extra Credit: 1 point) Write the repeating decimal number $1.2\overline{93}$ as fraction in lowest terms.

$F = 1.2\overline{93}$

$10F = 12.\overline{93}$

$1000F = 1293.\overline{93}$

$$\begin{array}{r} 1000F = 1293.\overline{93} \\ -\ 10F = 12.\overline{93} \\ \hline 990F = 1281 \end{array}$$

$$F = \frac{1281}{990} = \frac{427}{330}$$