

Math 2010, Problem Set #10

Name:

Due: Thursday, June 30th. *Show all work for partial credit!*

1. One result that mathematicians have been unable to prove true or false is called Goldbach's Conjecture. It claims that every *even* number greater than 2 can be expressed as the sum of two primes. For example,

$$4 = 2 + 2$$

$$6 = 3 + 3$$

$$8 = 5 + 3$$

$$10 = 5 + 5$$

$$12 = 5 + 7$$

⋮

Write each of the following even numbers as the sum of two primes:

(a) 20

(b) 24

(c) 38

(d) 46

2. Arrange the following fractions from smallest to largest:

(a) $\frac{2}{5}$, $\frac{3}{7}$, $\frac{1}{6}$

(b) $\frac{11}{15}$, $\frac{11}{21}$, $\frac{12}{17}$

3. Compute the sum $\frac{1}{5} + \frac{7}{10}$ and reduce if necessary. Illustrate your computation using shaded portions of a rectangle.

4. Compute the difference $\frac{5}{6} - \frac{3}{4}$. Illustrate your computation using lengths along the number line.

5. A student says that if $ab = cd$ then $\frac{a}{b} = \frac{c}{d}$. Is this true? Support your answer with an example.