Spring, 1999
Peterson

MATH 105.

Homework 11.

DUE: Friday, April 16.

P1. Solve for x in each case:

(1) $\dfrac{x+6}{x-1}+\dfrac{7}{x-5}=1$.

(2) $\dfrac{x+2}{x-1}+\dfrac{1}{x-5}=2$.

P2. Bill and Bob have a job to do. Bill could do the whole job alone in 42 hours, while Bob would need 30 hours to do the whole job by himself. Suppose that Bill works by himself for 10 hours and then Bob joins him and they work together until the job is done.

(1) How long did Bob have to work?

(2) Suppose that Bill charges $441 for the job when he does the job by himself, and Bob charges $396 for the job when he works by himself. How much should they charge for the job when they work together in the manner described above. How much should each of them receive?

P3. Bob and Mary were 440 miles apart and agreed (for once) to meet at the spot midway between them. Bob began driving at 8:50 AM, and Mary began driving at 9:20 AM. Bob was surprised when they showed up at the meeting spot at the same time. Mary noted that her average driving speed was 4 mph faster than Bob's average driving speed. What time was it when Bob and Mary met?

P4. Do the indicated polynomial division. Write your answer <u>at the bottom of your work</u> in our quotient-plus-remainder-divided-by-divisor form. (If the remainder is zero, your answer is the quotient.)

(1) $(x^3-5x^2+3x+7)\div(x-2)$.

(2) $(x^4-x^3-2x^2+x+2)\div(x^2-2x+3)$.

(3) $(x^3-8x-32)\div(x-4)$.

(4) $(x^4+5x^3+4x^2+x+11)\div(x+2)$.

P5. Suppose $a>0$, $b>0$, and $c>0$. Simplify the following expressions. All fractions need to be in reduced form and no negative exponents are allowed in final answers.

(1) $a^{\frac{1}{3}}b^{\frac{1}{6}}c^{\frac{5}{2}}\cdot a^{\frac{8}{3}}b^{-\frac{7}{6}}c^{-\frac{1}{2}}$.

(2) $\dfrac{a^{\frac{1}{2}}b^{-\frac{5}{3}}c^{\frac{2}{5}}}{a^{-\frac{1}{2}}b^{-\frac{2}{3}}c^{-\frac{8}{5}}}$.