

Section X.5 Homework

ORAL:

1. Determine the base-10 form of the following
 - (a) 11101001_2
 - (b) 300245_6
 - (c) 14367_{11}
 - (d) $3b7f2_{16}$
 - (e) $math_{36}$
2. Compute the following (without converting to base-10)
 - (a) $423578_{11} + 34289_{11}$
 - (b) $100010101_2 - 101110_2$
 - (c) $1011_2 \times 101_2$
 - (d) $45_{20} \times 87_{20}$
3. Convert the following base-10 numbers into the given base
 - (a) 597 to base 4
 - (b) 1239487 to base 16
 - (c) 89 to base 3
 - (d) 9332 to base 9
4. Convert the following p -adic numbers into rational numbers of the form $\frac{a}{b}$.
 - (a) $\dots 2222_{13} = \bar{2}_{13}$
 - (b) $\dots 4444_5 = \bar{4}_5$
 - (c) $\dots 261261261_7 = \bar{26}\bar{1}_7$
 - (d) $\dots 13131342_5 = \bar{13}42_5$

WRITTEN:

5. Give $\frac{-4}{9}$ as a 7-adic number. (Hint: Determine $\frac{5}{9}$ through division, then subtract 1)
6. Use the previous problem to solve $9x \equiv -4 \pmod{7^4}$.