## Math 5: Handout 14 Difference of Squares. Review.

## Difference of Squares

Not much new material today - mostly repeated stuff we had covered before. We did, however, cover one new and important formula:

$$
a^{2}-b^{2}=(a-b)(a+b)
$$

## Homework

o. Please finish the classwork problems from Handout 13 .

1. Solve the following equation: $3-5(2-x)=18$
2. Do the operations with binary numbers:
$101101+110100$
11011101-10010
3. If $a=3 \times 10^{-7}, b=5 \times 10^{-5}$, what is $a^{2} ? 1 / b ? a^{2} \div b^{3}$ ?
4. Factor the following number into primes: $99^{2}-9^{2}$. [Hint: you do not have to compute this number.]
5. Can you find whole numbers $a, b$ such that $a^{2}-b^{2}=17$ ? [Hint: use the formula we talked about in class, and think what $a-b$ and $a+b$ must be. ]
6. For the following problem, you need to know that the speed of light is about $300,000 \mathrm{~km} / \mathrm{sec}$, and one year is about $3 \cdot 10^{7}$ seconds.
a. How long would it take light to travel from Sun to Earth? The distance is about $1.5 \cdot 10^{8} \mathrm{~km}$
b. In astronomy, a common unit of distance is a light year: the distance light covers in one year. How many kilometers is it?
c. Another common unit of distance in astronomy is a parsec, which is approximately equal to $3 \times 10^{13} \mathrm{~km}$. Can you compute how many parsecs are there in one light year? How many parsecs between Earth and Sun? between Earth and the Andromeda Nebula ( $\approx 2,000,000,000,000,000,000,000 \mathrm{~km}$ )?
7. Solve (different letters stand for different digits):

FORTY

+ TEN
$+\quad$ TEN

