ACES Math: Algebra II - Placement Test

In 40 minutes, please try to work out as many problems as possible. This test is only used to help us place you in the right class that fits the level of your mathematical maturity.

Calculators are NOT allowed in this test. Cheating sheets are NOT allowed either. For each problem in the test, please try to write down every major step of your reasoning/calculation. Please try to keep your exam clean.

Problem 1. Use appropriate algebraic properties of numbers to remove the parentheses in the following expressions and simplify the results whenever possible.

(a) $(2x + 4)(x - 3)$:

(b) $(x - y)(x + y)$:

Problem 2. Find the solution to the following one-variable equation. Write down the major steps of your solution process.

$$5(x + 6) + 3 = 27 + 4x.$$

Problem 3. Solve the following one-variable inequality. Write down the major steps of your solution process.
$$-3(2x - 3) + 4 \geq 2x - 21.$$

Problem 4. Find the slope, the x-intercept and the y-intercept of the line described by the equation:
$$6(x - 1) + 3(2y - 6) = 4.$$

Problem 5. Solve the following system of two-variable equations. Write down the major steps of your solution process.
$$\begin{cases} 3x + 5y & = & -2 \\ 5x - 7y & = & 12 \end{cases}$$