Math 6c, homework 14.

1. Evaluate:
   a. $5 \cdot \sqrt{4} \cdot 3$;   b. $2 \cdot \sqrt{9} + 3 \cdot \sqrt{16}$
   c. $\sqrt{13 - 3 \cdot 3}$;   d. $\sqrt{7^2 - 26:2}$
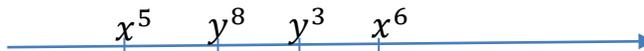   e. $\frac{1}{2}\sqrt{5^2 + 22:2}$;   f. $3\sqrt{0.64} - 5 \cdot \sqrt{1.21}$

2. Prove that the numbers 3^{33}, 3^{333}, 3^{3333} end with the same digit.

3.
$$x^5 < y^8 < y^3 < x^6$$

Where 0 should be placed?

4. Prove that
   $8^5 + 2^{11}$ is divisible by 17
   $9^7 - 3^{10}$ is divisible by 20

5. Write numbers 75 and 194 in binary system.

6. Write the numbers, written in the binary system in decimal system:
   a. 10011101;   b.100011011,   c. 11111111.

7. Factorize (represent as a product) the following polynomials:
   Example:
   $x(1 + b) + y(1 + b) = (1 + b)(x + y)$

   a. $x(1 + b) + y(1 + b)$;   f. $(a + b)a - b(a + b)$;
   b. $m(2k - 3) + 2(2k - 3)$;   g. $(x + y)3 - a(x + y)$;
   c. $2a(1 - b) - 3(1 - b)$;   h. $a(b + 3) - b(3 + b)$;
   d. $7x(x - 2y) - 2(2y + x)$;   i. $a(a + b) + (a + b)$;
   e. $2x(x - 2y) + 3y(x + 2y)$;   j. $2x(a - 1) - (a - 1)$;

8. Write the square of a sum as a polynomial:

   a. $\left(\frac{1}{2} + a\right)^2$ b. $(1.1 + p)^2$ c. $\left(\frac{3}{5}ab + \frac{1}{2}c^2\right)^2$