

Math 6c, homework 20



1. What property do the points possess:
 - a. $A(3, 2)$ and $B(-3, 2)$; b. $C(2, 5)$ and $D(2, -5)$;
 - c. $M(-4, 3)$ and $N(4, -3)$; d. $E(-3, 1)$ and $F(-3, -1)$;
 - e. $P(4, 5)$ and $N(-4, -5)$; f. $X(-6, 7)$ and $Y(6, 7)$;

2. a) Plot the points with coordinates $(1, 4)$, $(2, 7)$, $(3, 10)$.
These points lie on the same straight line. Draw this line.

b) Mark two more points on this line, label them A and B, and write their coordinates.

c) Point C $(2.3, 7.9)$ also lies on this line. Indicate its approximate position.

d) Plot point D $(1.5, 5.5)$. Does it lie on this line?

e) Point E $(6, y)$ lies on this line. Find y .

f) Point K $(x, 16)$ lies on this line. Find x .

3. The function is given by the formula $y = 3x - 1$. Is the equality correct:
 - a. $y(2) = 3$; b. $y(5) = 17$; c. $y\left(\frac{1}{3}\right) = 0$; d. $y(-1) = -3$.

4. The function is given by the formula $y = 1 - 4x$. Find
 - a. $y(6)$; b. $y(-7)$; c. $y(0.5)$; $y\left(\frac{2}{3}\right)$;

5. On the same coordinate system plot the functions:
 - a. $y = 2x - 1$, $f(x) = 2x + 1$,

 - b. $y = |x + 2|$; $y = |x| + 2$

 - c. $y = \frac{1}{2}x$; $y = 3x$;

 - d. $y = x^2$; $y = -x^2$;

6. Define the function by a formula if the rule describing the dependence of y on x for all $x > 0$ is as follows: for each x , the corresponding y is

- a. twice as large;
- b. 2 less;
- c. 5 greater;
- d. four times as large;
- e. 7 times smaller;
- f. equal to twice the square of xxx.

7. Represent as polynomial:

Example:

$$\begin{aligned}(2m + 3)^2 - 3(m - 4)(m + 4) - 56 &= 4m^2 + 12m + 9 - 3(m^2 - 16) - 56 \\ &= 4m^2 + 12m + 9 - 3m^2 + 48 - 56 = m^2 + 12m + 1 \\ 5(3 - 2a)(2a + 3) - 2(a - 5)^2 + 5 & ;\end{aligned}$$

8. Represent as an algebraic fraction:

Example:

$$\frac{2a}{a^2 - 9} + \frac{3}{a - 3} = \frac{2a}{(a - 3)(a + 3)} + \frac{2a}{a - 3} = \frac{2a}{(a - 3)(a + 3)} + \frac{2a(a + 3)}{(a - 3)(a + 3)} =$$

$$\frac{2a + 2a(a + 3)}{(a - 3)(a + 3)} = \frac{2a + 2a \cdot a + 2a \cdot 3}{a^2 - 9} = \frac{2a^2 + 2a + 6a}{a^2 - 9} = \frac{2a^2 + 8a}{a^2 - 9}$$

$$a. \frac{1}{a + b} + \frac{1}{a - b}; \quad b. \frac{1}{m + n} - \frac{1}{n}; \quad c. \frac{2}{a - b} + \frac{3}{a + b}; \quad d. \frac{4}{p - q} - \frac{3}{p + q};$$

$$e. \frac{7a}{3x + 3} - \frac{a}{6x - 6}; \quad f. \frac{2a}{a^2 - 9} + \frac{3}{a - 3}; \quad g. \frac{x^2 - 2xy}{(x - 2y)^3} + \frac{1}{2y - x};$$