Wochenplan (Woche 1) 8.9.23

Wochenplan Klasse: 12, Woche: 1

1. Stelle nach der angegebenen Variablen um.

a) $A = \frac{g \cdot h}{2} \rightarrow g$

b) $U = 4a \rightarrow a$

c) $U = a + b + c \rightarrow c$

d) $2a + 7 = 9 \rightarrow a$

e) $W = \frac{G}{100} \cdot p \rightarrow p$

f) $U = R \cdot I \rightarrow I$

g) $E = \frac{1}{2} \cdot m \cdot v^2 \rightarrow v$

h) $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} \rightarrow R_2$

i) $\frac{U_p}{U_s} = \frac{n_p}{n_s} \rightarrow n_s$

2. Vereinfache

a) $3 \cdot (5x + 6y - 2a)$ b) $4x \cdot (-2x + 6xy - 5x^2)$ c) $-5a \cdot (7a^2 - 2ab^2 + 5a^2b^2c^3)$

d) $(15x + 12 + 24x) : 3$ e) $(28x + 35xy) : (-7x)$ f) $(-3x^2 - 12x^2y) : (-3x^3)$

g) $(x + 2) \cdot (x - 4)^2$ h) $(-2x + 3y) \cdot (3x - 2y)$ i) $(2a + 3b) \cdot (4c - 5d)^2 \cdot (e + 6a)$

3. Zeichne jeweils den Graphen in ein eigenes Koordinatensystem

a) $f(x) = 3$

b) $f(x) = 2x - 3$

c) $f(x) = x^2 + 2x - 4$

4. Berechne

a) $\frac{a}{2} + \frac{b}{3} =$ b) $\frac{3a}{2} - \frac{4c}{3} =$ c) $\frac{a}{2} \cdot \frac{b}{3} =$ d) $\frac{x}{4} : \frac{b}{3} =$

1. a) $A = \frac{g \cdot h}{2} \quad / \cdot 2$

$2A = g \cdot h \quad / : h$

$$g = \frac{2A}{h}$$

b) $U = 4a \quad / : 4$

$$a = \frac{U}{4}$$

c) $U = a + b + c \quad / - a$

$U - a = b + c \quad / - b$

$$c = U - a - b$$

d) $2a + 7 = 9 \quad / - 7$

$2a = 2 \quad / : 2$

$$a = 1$$

e) $W = \frac{G}{100} \cdot p \quad / \cdot 100$

$W \cdot 100 = G \cdot p \quad / : G$

$$p = \frac{W \cdot 100}{G}$$

f) $U = R \cdot I \quad / : R$

$$I = \frac{U}{R}$$

g) $E = \frac{1}{2} \cdot m \cdot v^2 \quad / \cdot 2$

$2E = m \cdot v^2 \quad / : m$

$$\frac{2E}{m} = v^2 \quad / \sqrt{\ }$$

$$v = \sqrt{\frac{2E}{m}}$$

h) $$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} \quad / \cdot R_2$$

$$\frac{1}{R} \cdot R_2 = \frac{1}{R_1} + 1 \quad / \cdot R$$

$$1 \cdot R_2 = \left(\frac{1}{R_1} + 1\right) \cdot R$$

$$R_2 = \frac{1 \cdot R}{R_1} + 1 \cdot R$$

$$R_2 = \frac{R}{R_1} + R$$

i) $$\frac{U_p}{U_s} = \frac{n_p}{n_s} \quad / \cdot n_s$$

$$\frac{U_p \cdot n_s}{U_s} = n_p \quad / \cdot U_s$$

$$U_p \cdot n_s = n_p \cdot U_s \quad / : U_p$$

$$n_s = \frac{n_p \cdot U_s}{U_p}$$

2. a) $$3 \cdot (5x + 6y - 2a)$$

$$= 15x + 18y - 6a$$

b) $$4x \cdot (-2x + 6xy - 5x^2)$$

$$= -8x^2 + 24x^2y - 20x^3$$

c) $$-5a \cdot (7a^2 - 2ab^2 + 5a^2b^2c^3)$$

$= -35a^3 + 18a^2b^2 - 25a^3b^2c^3$

d) $(15x + 12 + 24x) : 3$

$= (39x + 12) : 3$

$= 13x + 4$

e) $(28x + 35xy) : (-7x)$

$= -4 - 5y$

f) $(-3x^2 - 12x^2y) : (-3x^3)$

$= \frac{-3x^2 - 12x^2y}{-3x^3}$

$= \frac{-3x^2 \cdot (1 + 4y)}{-3x^3}$

$= \frac{\cancel{-3}x^2 \cdot (1 + 4y)}{\cancel{-3}x^3}$

$= \frac{x^2 \cdot (1 + 4y)}{x^3} \qquad / : x^2$

$= \frac{1 + 4y}{x}$

g) $(x + 2) \cdot (x - 4)^2$

$= (x + 2) \cdot (x^2 - 8x + 16)$

$= x^3 - 8x^2 + 16x + 2x^2 - 16x + 32$

$= x^3 - 6x^2 + 32$

h) $(-2x + 3y) \cdot (3x - 2y)$

$$= -6x^2 + 4xy + 9xy - 6y^2$$

$$= -6x^2 - 6y^2 + 13xy$$

i) $(2a+3b) \cdot (4c-5d)^2 \cdot (e+6a)$

$$= [(2a+3b) \cdot (16c^2 - 40cd + 25d^2)] \cdot (e+6a)$$

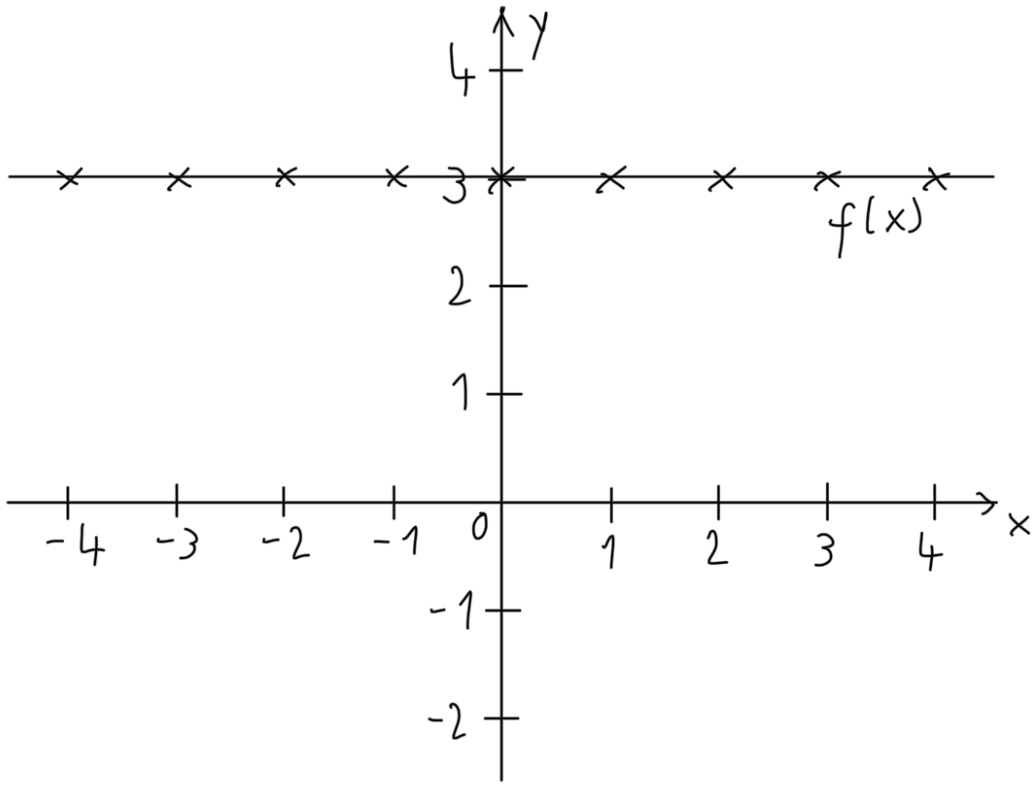
$$= (32ac^2 - 80acd + 50ad^2 + 48bc^2 - 120bcd + 75bd^2) \cdot (e+6a)$$

$$= 32ac^2e - 80acde + 50ad^2e + 48bc^2e - 120bcde + 75bd^2e$$

$$+ 192a^2c^2 - 480a^2cd + 300a^2d^2 + 288abc^2 - 720abcd + 450abd^2$$

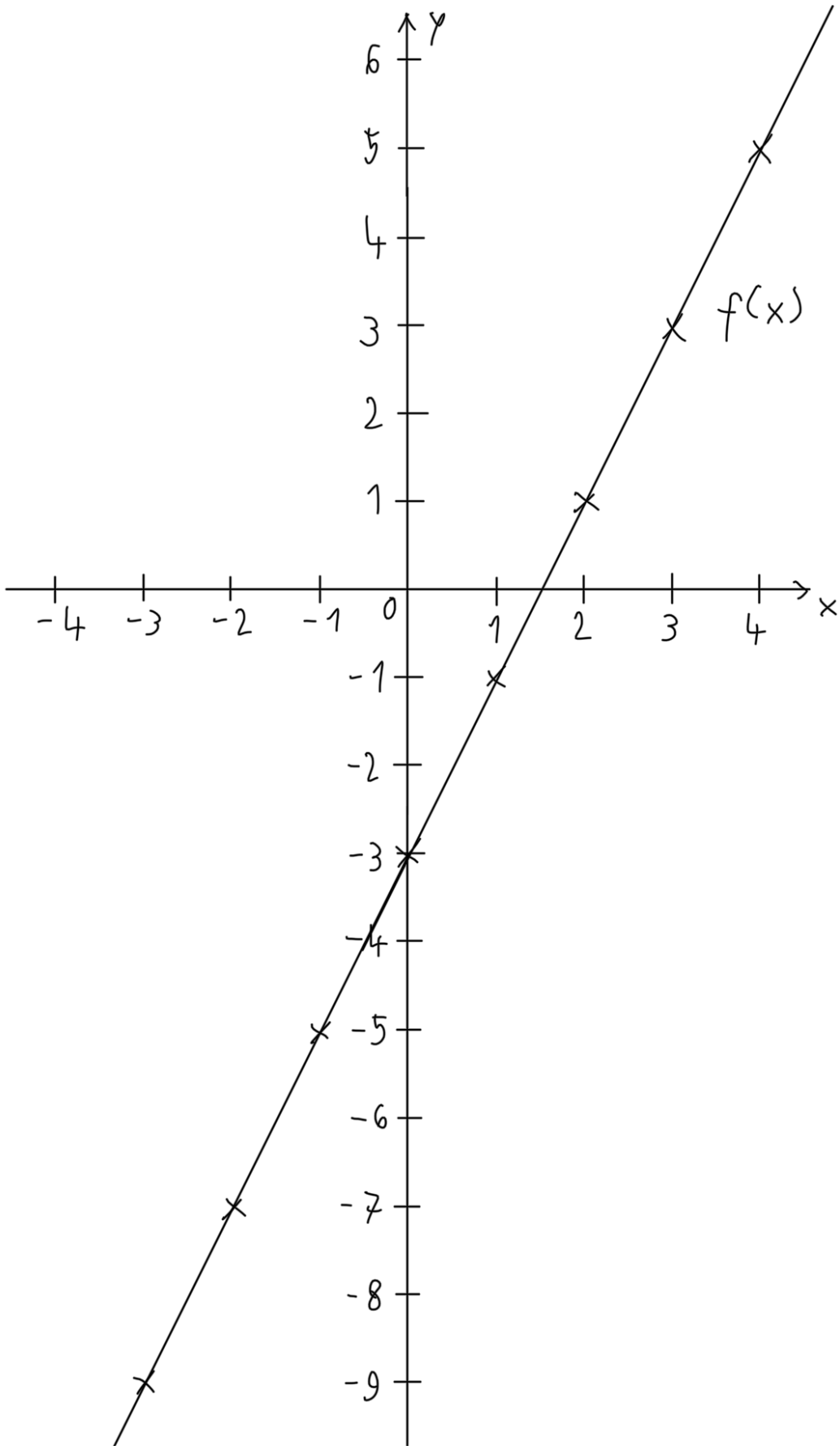
3. a) $f(x) = 3$

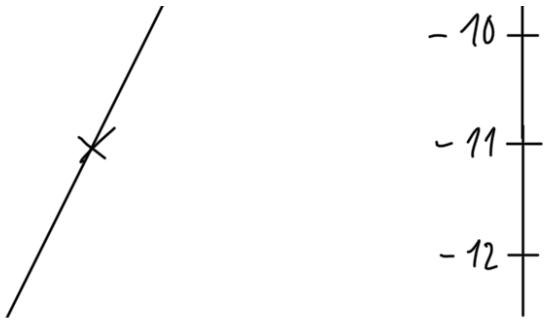
x	-4	-3	-2	-1	0	1	2	3	4
y	3	3	3	3	3	3	3	3	3



b) $f(x) = 2x - 3$

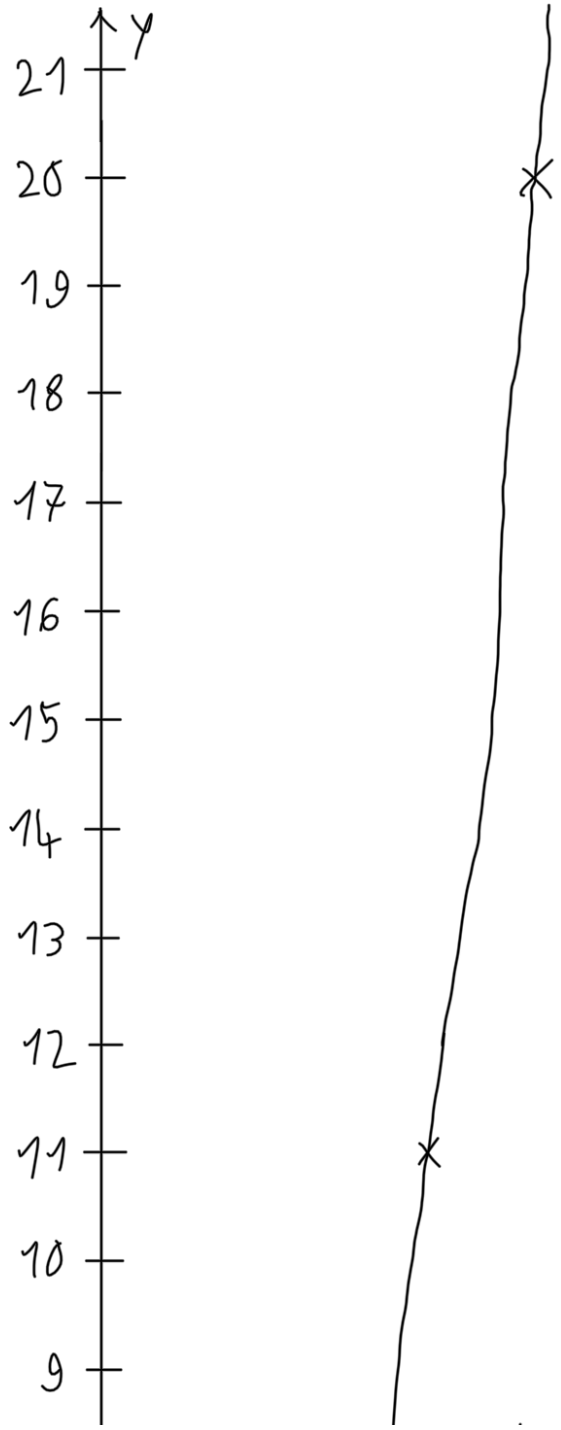
x	-4	-3	-2	-1	0	1	2	3	4
y	-11	-9	-7	-5	-3	-1	1	3	5

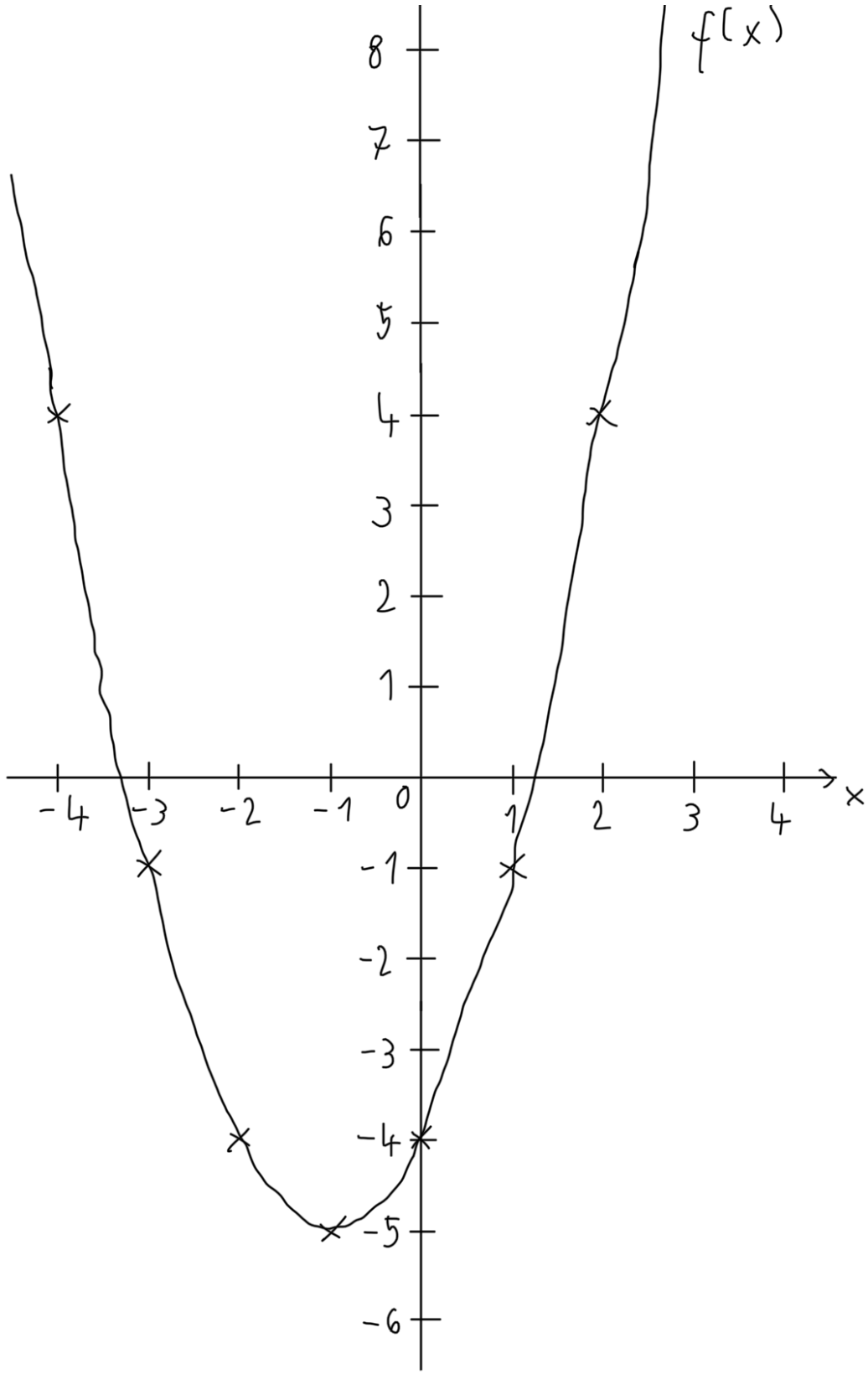




c) $f(x) = x^2 + 2x - 4$

x	-4	-3	-2	-1	0	1	2	3	4
y	4	-1	-4	-5	-4	-1	4	11	20





4. a) $\frac{a}{2} + \frac{b}{3} = \frac{1}{6} \cdot (3a + 2b)$

b) $\frac{3a}{2} - \frac{4c}{3}$

$$= \frac{1}{6} \cdot (3 \cdot 3a - 2 \cdot 4c)$$

$$= \frac{1}{6} \cdot (9a - 8c)$$

c) $\frac{a}{2} \cdot \frac{b}{3} = \frac{ab}{6}$

d) $\frac{x}{4} : \frac{b}{3} = \frac{x}{4} \cdot \frac{3}{b} = \frac{3x}{4b}$