B12S1 1. Schulaufgabe am 1.12.16

1.2 $f_a(3) = \frac{1}{6}\cdot 3^3 - 3^2 - a = 0 \Leftrightarrow a = -4{,}5$

$\frac{1}{6}(x^3 - 6x^2 + 0x + 27) : (x-3) = \frac{1}{6}(x^2 - 3x - 9)$

$-(x^3 - 3x^2)$

$-3x^2$

$-(-3x^2 + 9x)$

$-9x + 27$

$-(-9x + 27)$

$--$

$x^2 - 3x - 9 = 0$

$\Rightarrow x_{1/2} = \frac{1}{2}(3 \pm \sqrt{9 + 4\cdot 9}) = \frac{1}{2}(3 \pm 3\sqrt{5})$

$x_2 \approx 4{,}85$

$x_3 \approx -1{,}85$

$f(x) = \frac{1}{6}(x-3)(x - \frac{1}{2}(3+3\sqrt{5}))(x - \frac{1}{2}(3-3\sqrt{5}))$

1.4.1

A:	4	2	1	3,5		4	2	1	3,5
B:	16	4	1	0,5	−	12	2	0	−3 | ·7
C:	25	−5	1	1,75	−	21	−7	0	−5,25 · 2
						84	14		−21
						42	−14		−10,5

)+

$126a = -31{,}5 \Leftrightarrow a = -\frac{1}{4} = -0{,}25$

$12\cdot(-\frac{1}{4}) + 2b = -3 \Leftrightarrow b = 0$

$4\cdot(-\frac{1}{4}) + 2\cdot 0 + c = 3{,}5 \Leftrightarrow c = 4{,}5 \Rightarrow p(x) = -\frac{1}{4}x + 4{,}5$

1.4.2 $S(0\,|\,4{,}5)$

$-\frac{1}{4}x^2 + 4{,}5 = 0 \Leftrightarrow x^2 = 18 \Rightarrow x_{1/2} = \pm\sqrt{18} = \pm 3\sqrt{2}$ $(\approx \pm 4{,}24)$

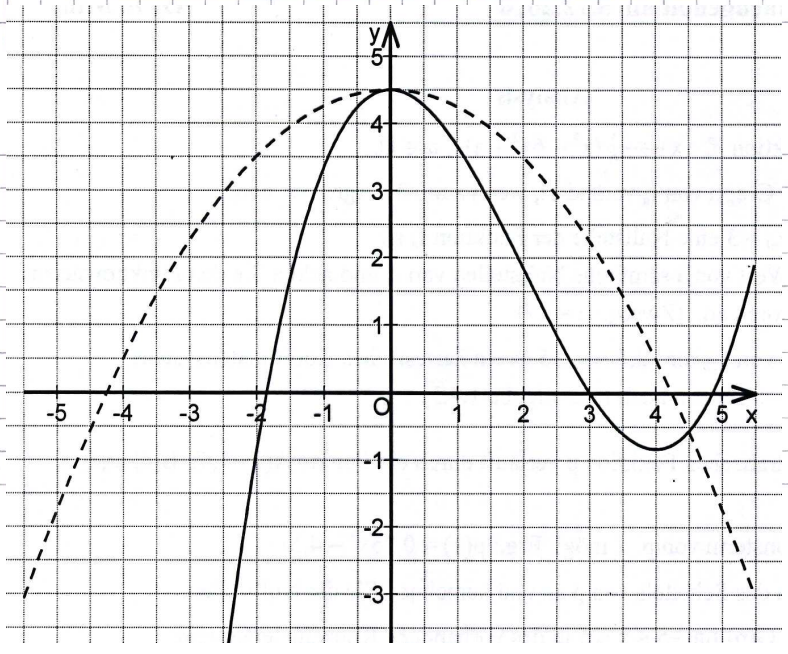
1.4.4 $\frac{1}{6}x^3 - x^2 + 4{,}5 = -\frac{1}{4}x^2 + 4{,}5 \Leftrightarrow \frac{1}{6}x^3 - \frac{3}{4}x^2 = 0$

$\Leftrightarrow \frac{1}{6}x^2(x - 4{,}5) = 0$; $x_{1/2} = 0$; $p(0) = 4{,}5 \Rightarrow S_{1/2}(0\,|\,4{,}5)$

$p(4{,}5) = -\frac{1}{4}\cdot 4{,}5^2 + 4{,}5 = -\frac{9}{16} = -0{,}5625 \Rightarrow S_3(4{,}5\,|\,-\frac{9}{16})$

1.1 Keine bes. Sym, da immer gerade und ungerade Exp.

1.3
1.4.3



B12S1 1. Schulaufgabe Mathematik am 1.12.16

2.1

	M	$\bar{M}$	
B	$\frac{9}{22}$	$\frac{12}{22} - \frac{9}{22} = \frac{3}{22}$	$\frac{12}{22}$
$\bar{B}$	$\frac{15}{22} - \frac{9}{22} = \frac{6}{22}$	$\frac{10}{22} - \frac{7}{22} = \frac{4}{22}$	$\frac{22}{22} - \frac{12}{22} = \frac{10}{22}$
	$\frac{15}{22}$	$\frac{22}{22} - \frac{15}{22} = \frac{7}{22}$	$\frac{22}{22}$

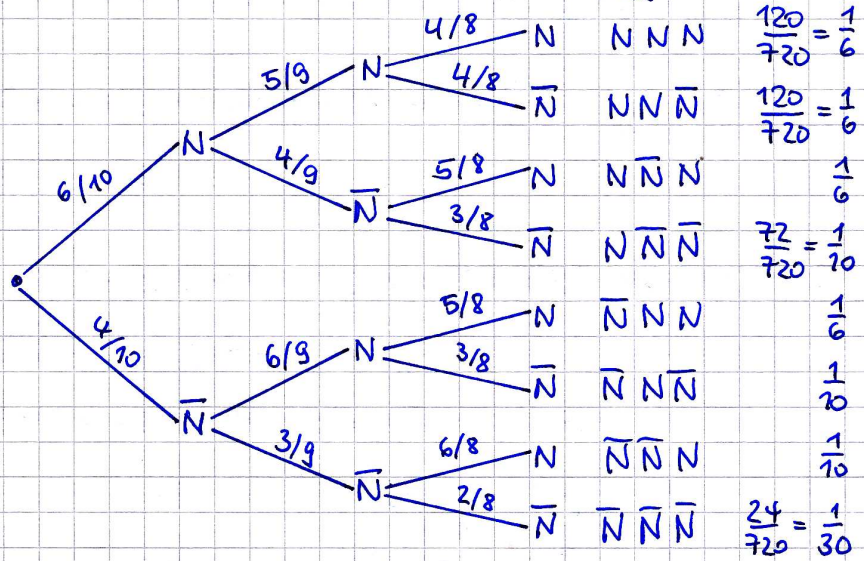
$P(M) \cdot P(B) = \frac{15}{22} \cdot \frac{12}{22} = \frac{45}{121}$ } ungleich $\Rightarrow$

$P(M \cap B) = \frac{9}{22}$ } stoch. abhängig

2.2 $E = (M \cap \bar{B}) \cup (\bar{M} \cap B)$

$P(E) = \frac{3}{22} + \frac{6}{22} = \frac{9}{22} \approx 40{,}9\,\%$

3.1



ω_i		A	B
N N N	$\frac{120}{720} = \frac{1}{6}$	*	
N N $\bar{N}$	$\frac{120}{720} = \frac{1}{6}$	*	*
N $\bar{N}$ N	$\frac{1}{6}$		
N $\bar{N}$ $\bar{N}$	$\frac{72}{720} = \frac{1}{10}$		*
$\bar{N}$ N N	$\frac{1}{6}$	*	
$\bar{N}$ N $\bar{N}$	$\frac{1}{10}$	*	*
$\bar{N}$ $\bar{N}$ N	$\frac{1}{10}$		
$\bar{N}$ $\bar{N}$ $\bar{N}$	$\frac{24}{720} = \frac{1}{30}$		*

3.2 $C = A \cap \bar{B} = \{NNN;\ \bar{N}NN\}$; $P(C) = \frac{1}{6} + \frac{1}{6} = \frac{1}{3}$

C: "2. und 3. Schüler bekommen N"

$\bar{C}$: "2. oder 3. Schüler bekommen kein N"

$P(\bar{C}) = 1 - P(C) = 1 - \frac{1}{3} \Rightarrow P(\bar{C}) = \frac{2}{3}$

3.3 $\bullet \xrightarrow{4/10} \bar{N} \xrightarrow{3/9} \bar{N} \xrightarrow{2/8} \bar{N} \xrightarrow{1/7} \bar{N} \xrightarrow{6/6} N$

$P = \frac{4}{10} \cdot \frac{3}{9} \cdot \frac{2}{8} \cdot \frac{1}{7} \cdot \frac{6}{6} \Rightarrow P = \frac{1}{210}$