

Lösungen / Statistik 1/12

```
Remove["Global`*"]
```

1.

```
p = 2 / 6 * 2 / 36 * 1 / 6
```

```

$$\frac{1}{324}$$

```

```
N[%]
```

```
0.00308642
```

2.

```
p1 = 97 / 213
```

```

$$\frac{97}{213}$$

```

```
N[%]
```

```
0.455399
```

```
p1 = 97 / 148
```

```

$$\frac{97}{148}$$

```

```
N[%]
```

```
0.655405
```

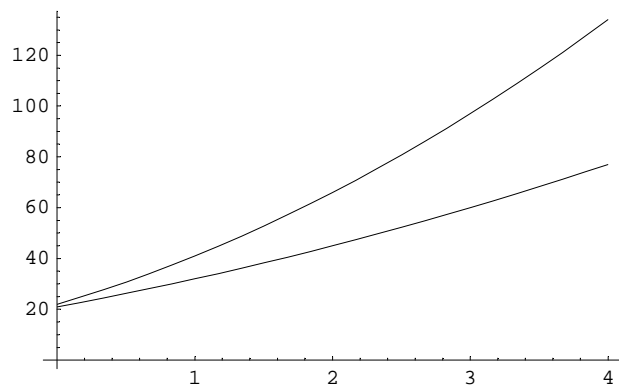
3.

a

```
f[t_] := 22 + 16 t + 3 t^2;
```

```
g[t_] := 21 + 10 t + t^2
```

```
Plot[{f[t], g[t]}, {t, 0, 4}];
```



```
Limit[g[t] / f[t], t → Infinity]
```

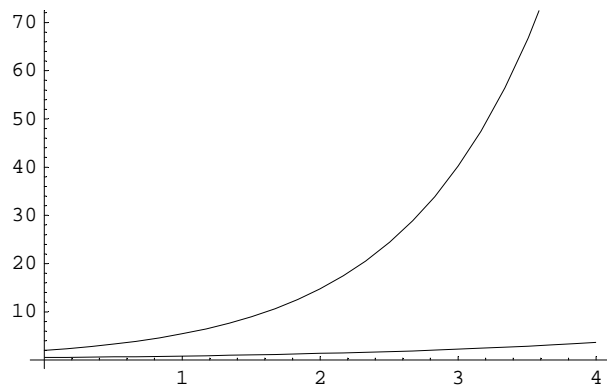
$$\frac{1}{3}$$

b

```
f[t_] := 2 E^t;
```

```
g[t_] := 1 / 2 E^(t / 2);
```

```
Plot[{f[t], g[t]}, {t, 0, 4}];
```



```
Limit[g[t] / f[t], t → Infinity]
```

$$0$$

c

```
p = 289 / 1000
```

$$\frac{289}{1000}$$

```
N[%]
```

$$0.289$$

4.

a

```
r1g2 = 4 / 10 * 3 / 9;  
g1r2 = 2 / 10 * 4 / 9;  
r1g2 + g1r2
```

$$\frac{2}{9}$$

```
N[%]
```

```
0.222222
```

b

```
3!
```

```
6
```

```
r = 4; j = 2; v = 3; n = 1;
```

```
r1j2v3 = r * j * v / (10 * 9 * 8) ;
```

```
r1v2j3 = r * v * j / (10 * 9 * 8) ;
```

```
r1j2v3 == r1v2j3
```

```
True
```

```
nF = r * v * j / (10 * 9 * 8) ;
```

```
vF = r * n * j / (10 * 9 * 8) ;
```

```
jF = r * n * v / (10 * 9 * 8) ;
```

```
nF = r * j * v / (10 * 9 * 8) ;
```

```
p = 6 (nF + vF + jF + nF)
```

$$\frac{17}{30}$$

```
N[%]
```

```
0.566667
```

5. Treppenfunktion

```
Remove["Global`*"]
```

```

h[x_] := Sign[(Sign[x] + 1) / 2];
p[1] = 1 / 6; t[1] = 0;
p[2] = 1 / 3; t[2] = 2;
p[3] = 1 / 12; t[3] = 3;
p[4] = 1 / 12; t[4] = 5;
p[5] = 1 / 3; t[5] = 7;
F[x_] := Sum[p[k] h[x - t[k]], {k, 1, 5}]

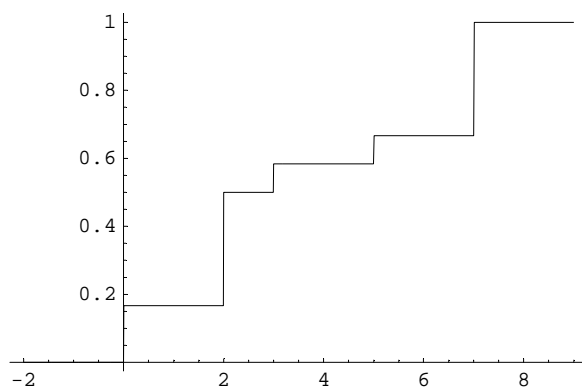
```

F[x]

$$\frac{1}{3} \text{Sign}[1 + \text{Sign}[-7 + x]] + \frac{1}{12} \text{Sign}[1 + \text{Sign}[-5 + x]] +$$

$$\frac{1}{12} \text{Sign}[1 + \text{Sign}[-3 + x]] + \frac{1}{3} \text{Sign}[1 + \text{Sign}[-2 + x]] + \frac{1}{6} \text{Sign}[1 + \text{Sign}[x]]$$

```
Plot[F[x], {x, -2, 9}];
```



```
Table[{t[k], F[t[k]]}, {k, 1, 5}] // N // TableForm
```

0.	0.166667
2.	0.5
3.	0.583333
5.	0.666667
7.	1.