

Kapitel 8 Beispiel 1 (siehe auch Programm 8.1.3\Programm 8.1.3\Form1.h)

```
1  #include "Transformation.h"
2  #include "math.h"
3  #pragma once
4  namespace Programm813
5  {
6      using namespace System;
7      using namespace System::ComponentModel;
8      using namespace System::Collections;
9      using namespace System::Windows::Forms;
10     using namespace System::Data;
11     using namespace System::Drawing;
12     /// <summary>
13     /// Zusammenfassung für Form1
14     ///
15     /// Warnung: Wenn Sie den Namen dieser Klasse ändern, müssen
16     /// Sie auch die Ressourcendateiname-Eigenschaft für das
17     /// Tool zur Kompilierung verwalteter Ressourcen ändern, das
18     /// allen RESX-Dateien zugewiesen ist, von denen diese
19     /// Klasse abhängt. Anderenfalls können die Designer nicht
20     /// korrekt mit den lokalisierten Ressourcen arbeiten, die
21     /// diesem Formular zugewiesen sind.
22     /// </summary>
23     public ref class Form1 : public System::Windows::Forms::Form
24     {
25     public:
26         Form1(void)
27         {
28             InitializeComponent();
29             //
30             //TODO: Konstruktorcode hier hinzufügen.
31             //
32         }
33     protected:
34         /// <summary>
35         /// Verwendete Ressourcen bereinigen.
36         /// </summary>
37         ~Form1()
38         {
39             if (components)
40             {
41                 delete components;
42             }
43         }
44         // Objekte der Oberfläche
45         // Überschrift
46     private:
47         System::Windows::Forms::Label^ lb_Ueberschrift;
48         // GroupBox "Weltkoordinaten"
49         System::Windows::Forms::GroupBox^ gB_welt;
50         System::Windows::Forms::Label^ lb_xwa;
51         System::Windows::Forms::TextBox^ tB_xwa;
52         System::Windows::Forms::Label^ lb_xwe;
53         System::Windows::Forms::TextBox^ tB_xwe;
54         System::Windows::Forms::Label^ lb_ywa;
55         System::Windows::Forms::TextBox^ tB_ywa;
56         System::Windows::Forms::Label^ lb_ywe;
57         System::Windows::Forms::TextBox^ tB_ywe;
58         System::Windows::Forms::Label^ lb_schrittweite;
59         System::Windows::Forms::TextBox^ tB_schrittweite;
60         // GroupBox "Screenkoordinaten"
61         System::Windows::Forms::GroupBox^ gB_screen;
62         System::Windows::Forms::Label^ lb_xsa;
63         System::Windows::Forms::TextBox^ tB_xsa;
64         System::Windows::Forms::Label^ lb_xse;
65         System::Windows::Forms::TextBox^ tB_xse;
66         System::Windows::Forms::Label^ lb_ysa;
67         System::Windows::Forms::TextBox^ tB_ysa;
68         System::Windows::Forms::Label^ lb_yse;
69         System::Windows::Forms::TextBox^ tB_yse;
70         // Button "Zeichne"
71         System::Windows::Forms::Button^ bt_zeichne;
72         /// <summary>
73         /// Erforderliche Designervariable.
74         /// </summary>
75         System::ComponentModel::Container ^components;
76         #pragma region Windows Form Designer generated code
77         /// <summary>
78         /// Erforderliche Methode für die Designerunterstützung.
79         /// Der Inhalt der Methode darf nicht mit dem Code-Editor
80         /// geändert werden.
81         /// </summary>
```

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82 void InitializeComponent(void)
83 {
84     this->lb_Ueberschrift =
85         (gcnew System::Windows::Forms::Label());
86     this->gB_welt =
87         (gcnew System::Windows::Forms::GroupBox());
88     this->lb_ywe =
89         (gcnew System::Windows::Forms::Label());
90     this->tB_schrittweite =
91         (gcnew System::Windows::Forms::TextBox());
92     this->lb_xwa =
93         (gcnew System::Windows::Forms::Label());
94     this->lb_schrittweite =
95         (gcnew System::Windows::Forms::Label());
96     this->lb_ywa =
97         (gcnew System::Windows::Forms::Label());
98     this->tB_xwa =
99         (gcnew System::Windows::Forms::TextBox());
100    this->tB_ywa =
101        (gcnew System::Windows::Forms::TextBox());
102    this->lb_xwe =
103        (gcnew System::Windows::Forms::Label());
104    this->tB_xwe =
105        (gcnew System::Windows::Forms::TextBox());
106    this->tB_ywe =
107        (gcnew System::Windows::Forms::TextBox());
108    this->gB_screen =
109        (gcnew System::Windows::Forms::GroupBox());
110    this->lb_yse =
111        (gcnew System::Windows::Forms::Label());
112    this->lb_xsa =
113        (gcnew System::Windows::Forms::Label());
114    this->lb_ysa =
115        (gcnew System::Windows::Forms::Label());
116    this->tB_xsa =
117        (gcnew System::Windows::Forms::TextBox());
118    this->tB_ysa =
119        (gcnew System::Windows::Forms::TextBox());
120    this->lb_xse =
121        (gcnew System::Windows::Forms::Label());
122    this->tB_xse =
123        (gcnew System::Windows::Forms::TextBox());
124    this->tB_yse =
125        (gcnew System::Windows::Forms::TextBox());
126    this->bt_zeichne =
127        (gcnew System::Windows::Forms::Button());
128    this->gB_welt->SuspendLayout();
129    this->gB_screen->SuspendLayout();
130    this->SuspendLayout();
131    //
132    // Form1
133    //
134    this->AutoScaleDimensions=System::Drawing::SizeF(6,13);
135    this->AutoScaleMode =
136        System::Windows::Forms::AutoScaleMode::Font;
137    this->BackColor = System::Drawing::Color::FromArgb(
138        static_cast<System::Int32>
139            (static_cast<System::Byte>(224)),
140        static_cast<System::Int32>
141            (static_cast<System::Byte>(224)),
142        static_cast<System::Int32>
143            (static_cast<System::Byte>(224)));
144    this->ClientSize = System::Drawing::Size(842, 616);
145    this->Controls->Add(this->bt_zeichne);
146    this->Controls->Add(this->gB_screen);
147    this->Controls->Add(this->gB_welt);
148    this->Controls->Add(this->lb_Ueberschrift);
149    this->Name = L"Form1";
150    this->Text = L"Sinusplot";
151    this->Load += gcnew System::EventHandler(
152        this, &Form1::Form1_Load);
153    this->gB_welt->ResumeLayout(false);
154    this->gB_welt->PerformLayout();
155    this->gB_screen->ResumeLayout(false);
156    this->gB_screen->PerformLayout();
157    this->ResumeLayout(false);
158    this->PerformLayout();
159    //
160    // lb_Ueberschrift
161    //
162    this->lb_Ueberschrift->AutoSize = true;
163    this->lb_Ueberschrift->Font =
164        (gcnew System::Drawing::Font
165            (L"Comic Sans MS",14.25F,

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166         System::Drawing::FontStyle::Regular,
167         System::Drawing::GraphicsUnit::Point,
168         static_cast<System::Byte>(0)));
169     this->lb_Ueberschrift->Location =
170         System::Drawing::Point(12, 23);
171     this->lb_Ueberschrift->Name = L"lb_Ueberschrift";
172     this->lb_Ueberschrift->Size = System::Drawing::Size
173         (782, 26);
174     this->lb_Ueberschrift->TabIndex = 0;
175     this->lb_Ueberschrift->Text = L
176         "Programm zur Darstellung der
177         Koordiantentransformation \"Welt- in
178         Screenkoordinate\" L\"n\"";
179     //
180     // gB_welt
181     //
182     this->gB_welt->Controls->Add(this->lb_ywe);
183     this->gB_welt->Controls->Add(this->tB_schrittweite);
184     this->gB_welt->Controls->Add(this->lb_xwa);
185     this->gB_welt->Controls->Add(this->lb_schrittweite);
186     this->gB_welt->Controls->Add(this->lb_ywa);
187     this->gB_welt->Controls->Add(this->tB_xwa);
188     this->gB_welt->Controls->Add(this->tB_ywa);
189     this->gB_welt->Controls->Add(this->lb_xwe);
190     this->gB_welt->Controls->Add(this->tB_xwe);
191     this->gB_welt->Controls->Add(this->tB_ywe);
192     this->gB_welt->Font = (gcnew System::Drawing::Font
193         (L"Comic Sans MS", 9.75F,
194         System::Drawing::FontStyle::Bold,
195         System::Drawing::GraphicsUnit::Point,
196         static_cast<System::Byte>(0)));
197     this->gB_welt->Location=System::Drawing::Point(16,73);
198     this->gB_welt->Name = L"gB_welt";
199     this->gB_welt->Size = System::Drawing::Size(300, 170);
200     this->gB_welt->TabIndex = 21;
201     this->gB_welt->TabStop = false;
202     this->gB_welt->Text = L"Weltkoordinaten";
203     //
204     // lb_xwa
205     //
206     this->lb_xwa->AutoSize = true;
207     this->lb_xwa->Font = (gcnew System::Drawing::Font
208         (L"Comic Sans MS", 9.75F,
209         System::Drawing::FontStyle::Regular,
210         System::Drawing::GraphicsUnit::Point,
211         static_cast<System::Byte>(0)));
212     this->lb_xwa->Location=System::Drawing::Point(22,40);
213     this->lb_xwa->Name = L"lb_xwa";
214     this->lb_xwa->Size = System::Drawing::Size(40, 18);
215     this->lb_xwa->TabIndex = 3;
216     this->lb_xwa->Text = L"x von";
217     //
218     // tB_xwa
219     //
220     this->tB_xwa->Font = (gcnew System::Drawing::Font
221         (L"Comic Sans MS", 9.75F,
222         System::Drawing::FontStyle::Regular,
223         System::Drawing::GraphicsUnit::Point,
224         static_cast<System::Byte>(0)));
225     this->tB_xwa->Location =System::Drawing::Point(85,32);
226     this->tB_xwa->Name = L"tB_xwa";
227     this->tB_xwa->Size = System::Drawing::Size(50, 26);
228     this->tB_xwa->TabIndex = 1;
229     //
230     // lb_xwe
231     //
232     this->lb_xwe->AutoSize = true;
233     this->lb_xwe->Font = (gcnew System::Drawing::Font
234         (L"Comic Sans MS", 9.75F,
235         System::Drawing::FontStyle::Regular,
236         System::Drawing::GraphicsUnit::Point,
237         static_cast<System::Byte>(0)));
238     this->lb_xwe->Location =System::Drawing::Point(163,40);
239     this->lb_xwe->Name = L"lb_xwe";
240     this->lb_xwe->Size = System::Drawing::Size(38, 18);
241     this->lb_xwe->TabIndex = 7;
242     this->lb_xwe->Text = L"x bis";
243     //
244     // tB_xwe
245     //
246     this->tB_xwe->Font = (gcnew System::Drawing::Font
247         (L"Comic Sans MS", 9.75F,
248         System::Drawing::FontStyle::Regular,
249         System::Drawing::GraphicsUnit::Point,

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250         static_cast<System::Byte>(0));
251     this->tB_xwe->Location = System::Drawing::Point(224, 32);
252     this->tB_xwe->Name = L"tB_xwe";
253     this->tB_xwe->Size = System::Drawing::Size(50, 26);
254     this->tB_xwe->TabIndex = 2;
255     //
256     // lb_ywa
257     //
258     this->lb_ywa->AutoSize = true;
259     this->lb_ywa->Font = (gcnew System::Drawing::Font
260         (L"Comic Sans MS", 9.75F,
261         System::Drawing::FontStyle::Regular,
262         System::Drawing::GraphicsUnit::Point,
263         static_cast<System::Byte>(0)));
264     this->lb_ywa->Location = System::Drawing::Point(22, 87);
265     this->lb_ywa->Name = L"lb_ywa";
266     this->lb_ywa->Size = System::Drawing::Size(39, 18);
267     this->lb_ywa->TabIndex = 4;
268     this->lb_ywa->Text = L"y von";
269     //
270     // tB_ywa
271     //
272     this->tB_ywa->Font = (gcnew System::Drawing::Font
273         (L"Comic Sans MS", 9.75F,
274         System::Drawing::FontStyle::Regular,
275         System::Drawing::GraphicsUnit::Point,
276         static_cast<System::Byte>(0)));
277     this->tB_ywa->Location = System::Drawing::Point(85, 79);
278     this->tB_ywa->Name = L"tB_ywa";
279     this->tB_ywa->Size = System::Drawing::Size(50, 26);
280     this->tB_ywa->TabIndex = 3;
281     //
282     // lb_ywe
283     //
284     this->lb_ywe->AutoSize = true;
285     this->lb_ywe->Font = (gcnew System::Drawing::Font
286         (L"Comic Sans MS", 9.75F,
287         System::Drawing::FontStyle::Regular,
288         System::Drawing::GraphicsUnit::Point,
289         static_cast<System::Byte>(0)));
290     this->lb_ywe->Location = System::Drawing::Point(165, 87);
291     this->lb_ywe->Name = L"lb_ywe";
292     this->lb_ywe->Size = System::Drawing::Size(37, 18);
293     this->lb_ywe->TabIndex = 8;
294     this->lb_ywe->Text = L"y bis";
295     //
296     // tB_ywe
297     //
298     this->tB_ywe->Font = (gcnew System::Drawing::Font
299         (L"Comic Sans MS", 9.75F,
300         System::Drawing::FontStyle::Regular,
301         System::Drawing::GraphicsUnit::Point,
302         static_cast<System::Byte>(0)));
303     this->tB_ywe->Location = System::Drawing::Point(224, 79);
304     this->tB_ywe->Name = L"tB_ywe";
305     this->tB_ywe->Size = System::Drawing::Size(50, 26);
306     this->tB_ywe->TabIndex = 4;
307     //
308     // lb_schrittweite
309     //
310     this->lb_schrittweite->AutoSize = true;
311     this->lb_schrittweite->Font = (gcnew System::Drawing::
312         Font(L"Comic Sans MS", 9.75F,
313         System::Drawing::FontStyle::Regular,
314         System::Drawing::GraphicsUnit::Point,
315         static_cast<System::Byte>(0)));
316     this->lb_schrittweite->Location = System::Drawing::
317         Point(120, 134);
318     this->lb_schrittweite->Name = L"lb_schrittweite";
319     this->lb_schrittweite->Size = System::Drawing::
320         Size(84, 18);
321     this->lb_schrittweite->TabIndex = 19;
322     this->lb_schrittweite->Text = L"Schrittweite";
323     //
324     // tB_schrittweite
325     //
326     this->tB_schrittweite->Font = (gcnew System::Drawing::
327         Font(L"Comic Sans MS", 9.75F,
328         System::Drawing::FontStyle::Regular,
329         System::Drawing::GraphicsUnit::Point,
330         static_cast<System::Byte>(0)));
331     this->tB_schrittweite->Location = System::Drawing::
332         Point(224, 126);
333     this->tB_schrittweite->Name = L"tB_schrittweite";

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334     this->tB_schrittweite->Size = System::Drawing::
335         Size(50, 26);
336     this->tB_schrittweite->TabIndex = 5;
337     //
338     // gB_screen
339     //
340     this->gB_screen->Controls->Add(this->lb_yse);
341     this->gB_screen->Controls->Add(this->lb_xsa);
342     this->gB_screen->Controls->Add(this->lb_ysa);
343     this->gB_screen->Controls->Add(this->tB_xsa);
344     this->gB_screen->Controls->Add(this->tB_ysa);
345     this->gB_screen->Controls->Add(this->lb_xse);
346     this->gB_screen->Controls->Add(this->tB_xse);
347     this->gB_screen->Controls->Add(this->tB_yse);
348     this->gB_screen->Font = (gcnew System::Drawing::
349         Font(L"Comic Sans MS", 9.75F,
350             System::Drawing::FontStyle::Bold,
351             System::Drawing::GraphicsUnit::Point,
352             static_cast<System::Byte>(0)));
353     this->gB_screen->Location = System::Drawing::
354         Point(341, 73);
355     this->gB_screen->Name = L"gB_screen";
356     this->gB_screen->Size = System::Drawing::
357         Size(300, 170);
358     this->gB_screen->TabIndex = 22;
359     this->gB_screen->TabStop = false;
360     this->gB_screen->Text = L"Screenkoordinaten";
361     //
362     // lb_xsa
363     //
364     this->lb_xsa->AutoSize = true;
365     this->lb_xsa->Font = (gcnew System::Drawing::
366         Font(L"Comic Sans MS", 9.75F,
367             System::Drawing::FontStyle::Regular,
368             System::Drawing::GraphicsUnit::Point,
369             static_cast<System::Byte>(0)));
370     this->lb_xsa->Location = System::Drawing::
371         Point(22, 40);
372     this->lb_xsa->Name = L"lb_xsa";
373     this->lb_xsa->Size = System::Drawing::Size(40, 18);
374     this->lb_xsa->TabIndex = 3;
375     this->lb_xsa->Text = L"x von";
376     //
377     // tB_xsa
378     //
379     this->tB_xsa->Font = (gcnew System::Drawing::
380         Font(L"Comic Sans MS", 9.75F,
381             System::Drawing::FontStyle::Regular,
382             System::Drawing::GraphicsUnit::Point,
383             static_cast<System::Byte>(0)));
384     this->tB_xsa->Location = System::Drawing::
385         Point(85, 32);
386     this->tB_xsa->Name = L"tB_xsa";
387     this->tB_xsa->Size = System::Drawing::Size(50, 26);
388     this->tB_xsa->TabIndex = 6;
389     //
390     // lb_xse
391     //
392     this->lb_xse->AutoSize = true;
393     this->lb_xse->Font = (gcnew System::Drawing::
394         Font(L"Comic Sans MS", 9.75F,
395             System::Drawing::FontStyle::Regular,
396             System::Drawing::GraphicsUnit::Point,
397             static_cast<System::Byte>(0)));
398     this->lb_xse->Location=System::Drawing::Point(163,40);
399     this->lb_xse->Name = L"lb_xse";
400     this->lb_xse->Size = System::Drawing::Size(38, 18);
401     this->lb_xse->TabIndex = 7;
402     this->lb_xse->Text = L"x bis";
403     //
404     // tB_xse
405     //
406     this->tB_xse->Font = (gcnew System::Drawing::
407         Font(L"Comic Sans MS", 9.75F,
408             System::Drawing::FontStyle::Regular,
409             System::Drawing::GraphicsUnit::Point,
410             static_cast<System::Byte>(0)));
411     this->tB_xse->Location=System::Drawing::Point(224,32);
412     this->tB_xse->Name = L"tB_xse";
413     this->tB_xse->Size = System::Drawing::Size(50, 26);
414     this->tB_xse->TabIndex = 7;
415     //
416     // lb_yse
417     //

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418         this->lb_yse->AutoSize = true;
419         this->lb_yse->Font = (gcnew System::Drawing::
420             Font(L"Comic Sans MS", 9.75F,
421                 System::Drawing::FontStyle::Regular,
422                 System::Drawing::GraphicsUnit::Point,
423                 static_cast<System::Byte>(0)));
424         this->lb_yse->Location = System::Drawing::Point(22,87);
425         this->lb_yse->Name = L"lb_yse";
426         this->lb_yse->Size = System::Drawing::Size(39, 18);
427         this->lb_yse->TabIndex = 4;
428         this->lb_yse->Text = L"y von";
429         //
430         // tB_yse
431         //
432         this->tB_yse->Font = (gcnew System::Drawing::
433             Font(L"Comic Sans MS", 9.75F,
434                 System::Drawing::FontStyle::Regular,
435                 System::Drawing::GraphicsUnit::Point,
436                 static_cast<System::Byte>(0)));
437         this->tB_yse->Location=System::Drawing::Point(85, 79);
438         this->tB_yse->Name = L"tB_yse";
439         this->tB_yse->Size = System::Drawing::Size(50, 26);
440         this->tB_yse->TabIndex = 8;
441         //
442         // lb_ysa
443         //
444         this->lb_ysa->AutoSize = true;
445         this->lb_ysa->Font = (gcnew System::Drawing::
446             Font(L"Comic Sans MS", 9.75F,
447                 System::Drawing::FontStyle::Regular,
448                 System::Drawing::GraphicsUnit::Point,
449                 static_cast<System::Byte>(0)));
450         this->lb_ysa->Location=System::Drawing::Point(165,87);
451         this->lb_ysa->Name = L"lb_ysa";
452         this->lb_ysa->Size = System::Drawing::Size(37, 18);
453         this->lb_ysa->TabIndex = 8;
454         this->lb_ysa->Text = L"y bis";
455         //
456         // tB_ysa
457         //
458         this->tB_ysa->Font = (gcnew System::Drawing::
459             Font(L"Comic Sans MS", 9.75F,
460                 System::Drawing::FontStyle::Regular,
461                 System::Drawing::GraphicsUnit::Point,
462                 static_cast<System::Byte>(0)));
463         this->tB_ysa->Location =System::Drawing::Point(224,79);
464         this->tB_ysa->Name = L"tB_ysa";
465         this->tB_ysa->Size = System::Drawing::Size(50, 26);
466         this->tB_ysa->TabIndex = 9;
467         //
468         // bt_zeichne
469         //
470         this->bt_zeichne->Font = (gcnew System::Drawing::
471             Font(L"Comic Sans MS", 9.75F,
472                 System::Drawing::FontStyle::Regular,
473                 System::Drawing::GraphicsUnit::Point,
474                 static_cast<System::Byte>(0)));
475         this->bt_zeichne->Location = System::Drawing::
476             Point(675, 105);
477         this->bt_zeichne->Name = L"bt_zeichne";
478         this->bt_zeichne->Size =System::Drawing::Size(119,113);
479         this->bt_zeichne->TabIndex = 23;
480         this->bt_zeichne->Text = L"Zeichne\r\n\r\nSinus-
481             \r\n\r\nKurve";
482         this->bt_zeichne->UseVisualStyleBackColor = true;
483         this->bt_zeichne->Click += gcnew System::EventHandler(
484             this,&Form1::bt_zeichne_Click);
485     }
486     #pragma endregion
487     // Hier endet der von Visual C++ erzeugte Programmteil.
488     // Die Methodenköpfe der folgenden Methoden sind ebenfalls
489     // vom System generiert.
490     // Die Methodenrumpfe sind individueller Code.
491     private: System::Void Form1_Load(System::Object^ sender,
492         System::EventArgs^ e)
493     {
494         // Diese Methode wird beim Load der Maske aufgerufen
495         // Aufgabe: Versorgung der Koordinaten mit Anfangswerten,
496         // um dem Programmierer in der Entwicklungs- und
497         // Testphase die Eingabe zu ersparen!
498         // Kann später evtl. wieder deaktiviert werden!
499         // Vorsicht: nicht einfach Methode entfernen (Event-
500         // Verweis ist bereits im Visual C++ - Teil realisiert!)
501         // Daher besser kompletten Methodenrumpf kommentieren!

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502 // Group "Weltkoordinaten"
503 this->tB_xwa->Text = "-4,0";
504 this->tB_xwe->Text = "6,0";
505 this->tB_ywa->Text = "-2,0";
506 this->tB_ywe->Text = "3,0";
507 this->tB_schrittweite->Text = "0,001";
508 // Group "Screenkoordinaten"
509 this->tB_xsa->Text = "100";
510 this->tB_xse->Text = "700";
511 this->tB_yse->Text = "300";
512 this->tB_ysa->Text = "500";
513 }
514 private: System::Void bt_zeichne_Click(System::Object^
515 sender, System::EventArgs^ e)
516 {
517 // Methode wird aufgerufen, wenn der Button "Zeichne"
518 // geklickt wird
519 // Deklaration der lokalen Variablen
520 int xsa; // x-Richtung, Screen, Anfang
521 int xse; // x-Richtung, Screen, Ende
522 int ysa; // y-Richtung, Screen, Anfang
523 int yse; // y-Richtung, Screen, Ende
524 double xwa; // x-Richtung, Welt, Anfang
525 double xwe; // x-Richtung, Welt, Ende
526 double ywa; // y-Richtung, Welt, Anfang
527 double ywe; // y-Richtung, Welt, Ende
528 double schrittw; // Schrittweite
529 int x1; // x-Koordinate des ersten Punktes einer Linie
530 int y1; // y-Koordinate des ersten Punktes einer Linie
531 int x2; // x-Koordinate zweiter Punkt einer Linie
532 int y2; // y-Koordinate zweiter Punkt einer Linie
533 double xlauf;
534 // Erzeugung eines neuen Grafik-Objektes, auf das später
535 // die Grafik-Befehle angewendet werden können
536 Graphics ^g = this->CreateGraphics();
537 // Definition der Hintergrundfarbe durch R-G-B-Code
538 Color cl = Color::FromArgb(224,224,224);
539 // Bereinigen des Grafik-Objektes für Folgeaufruf
540 g->Clear(cl);
541 // Übernahme Einträge aus den TextBoxen mit try - catch
542 // fehlerhafte Eingabe ==> MessageBox
543 try
544 {
545 // Auslesen der Screen-Koordinaten, textBox ==> int
546 xsa = Convert::ToInt32(tB_xsa->Text);
547 xse = Convert::ToInt32(tB_xse->Text);
548 yse = Convert::ToInt32(tB_yse->Text);
549 ysa = Convert::ToInt32(tB_ysa->Text);
550 // Auslesen der Welt-Koordinaten, textBox ==> double
551 xwa = Convert::ToDouble(tB_xwa->Text);
552 xwe = Convert::ToDouble(tB_xwe->Text);
553 ywa = Convert::ToDouble(tB_ywa->Text);
554 ywe = Convert::ToDouble(tB_ywe->Text);
555 // Auslesen der Schrittweite, textBox ==> double
556 schrittw = Convert::ToDouble(tB_schrittweite->Text);
557 // Kontrollrahmen für die Zeichnungsfläche
558 g->DrawRectangle(gcnew Pen(Color::Aqua),
559 xsa,yse,xse-xsa,ysa-yse);
560 // Konstruktion des Koordinatensystems
561 // x-Achse: Strich von (xwa,0) nach (xwe,0)
562 x1 =trans(xsa,xse,xwa,xwe,xwa);
563 y1 =trans(ysa,yse,ywa,ywe,0.);
564 x2 =trans(xsa,xse,xwa,xwe,xwe);
565 g->DrawLine(gcnew Pen(Color::Black), x1, y1, x2, y1);
566 // x-Achse: Pfeilspitze
567 x1 =trans(xsa,xse,xwa,xwe,xwe);
568 x2 =trans(xsa,xse,xwa,xwe,xwe)-5;
569 y2 =trans(ysa,yse,ywa,ywe,0.)+5;
570 g->DrawLine(gcnew Pen(Color::Black), x1, y1, x2, y2);
571 y2 =trans(ysa,yse,ywa,ywe,0.)-5;
572 g->DrawLine(gcnew Pen(Color::Black), x1, y1, x2, y2);
573 // y-Achse: Strich von (0,ywa) nach (0,ywe)
574 x1 =trans(xsa,xse,xwa,xwe,0.);
575 y1 =trans(ysa,yse,ywa,ywe,ywa);
576 y2 =trans(ysa,yse,ywa,ywe,ywe);
577 g->DrawLine(gcnew Pen(Color::Black), x1, y1, x1, y2);
578 // y-Achse: Pfeilspitze
579 y1 =trans(ysa,yse,ywa,ywe,ywe),
580 x2 =trans(xsa,xse,xwa,xwe,0.)-5;
581 y2 =trans(ysa,yse,ywa,ywe,ywe)+5;
582 g->DrawLine(gcnew Pen(Color::Black), x1, y1, x2, y2);
583 x2 = trans(xsa,xse,xwa,xwe,0.)+5;
584 g->DrawLine(gcnew Pen(Color::Black), x1, y1, x2, y2);
585 // Konstruktion des Graphen

```

```

586         for (xlauf = xwa + schrittw; xlauf <= xwe;
587             xlauf = xlauf + schrittw)
588         {
589             x1 =trans(xsa,xse,xwa,xwe,xlauf-schrittw);
590             y1 =trans(ysa,yse,ywa,ywe,sin(xlauf-schrittw));
591             x2 =trans(xsa,xse,xwa,xwe,xlauf);
592             y2 =trans(ysa,yse,ywa,ywe,sin(xlauf));
593             g->DrawLine(gcnew Pen(Color::Red), x1, y1, x2, y2);
594         }
595     }
596     catch (Exception ^e)
597     {
598         // Ausgabe einer Fehlermeldung, falls eine Exception
599         // abgefangen werden musste.
600         MessageBox::Show("Eingabe nicht numerisch, bitte
601                             korrigieren!", "Eingabefehler");
602     }
603 } // Ende bt_zeichne_Click
604 }; // Ende class
605 } // Ende namespace

```