```
> y :=x-> a+b*x+c*x^2;
```

$$y := x \to a + b\,x + c\,x^2$$

```
> n:=solve({y(0)=y0,y(h1)=y1,y(h1+h2)=y2},{a,b,c});
```

$$n := \left\{ a = y0,\ b = \left(-2\,h2\,y0\,h1 - h2^2\,y0 + 2\,h1\,h2\,y1 - h1^2\,y2 + h1^2\,y1 + h2^2\,y1 \right) \Big/ \left(h1\,h2\,(h1 + h2) \right),\ c = -\frac{-h2\,y0 + h2\,y1 - h1\,y2 + h1\,y1}{h1\,h2\,(h1 + h2)} \right\}$$

```
>
```

```
> h:=int(y(x),x=h1/2..h1+h2/2);
```

$$h := \frac{1}{2}\,a\,h1 + \frac{1}{2}\,a\,h2 + \frac{1}{24}\,c\,h2^3 + \frac{3}{8}\,b\,h1^2 + \frac{1}{2}\,b\,h1\,h2 + \frac{7}{24}\,c\,h1^3 + \frac{1}{8}\,b\,h2^2 + \frac{1}{4}\,c\,h1\,h2^2 + \frac{1}{2}\,c\,h1^2\,h2$$

```
> hs := subs(n,h):
```

```
> hc := collect('',[y0,y1,y2]):
> c0 := simplify(coeff(hc,y0));
```

$$c0 := \frac{1}{24}\,\frac{h1^2 + 2\,h1\,h2 - 2\,h2^2}{h1}$$

```
>
> c1 := simplify(coeff(hc,y1) );
```

$$c1 := \frac{1}{24}\,\frac{2\,h1^3 + 9\,h1^2\,h2 + 9\,h1\,h2^2 + 2\,h2^3}{h1\,h2}$$

```
> c2 := simplify(coeff(hc,y2));
```

$$c2 := -\frac{1}{24}\,\frac{2\,h1^2 - 2\,h1\,h2 - h2^2}{h2}$$

> h:=int(y(x),x=0..(h1)/2);

$$h := \frac{1}{2}\,a\,h1 + \frac{1}{24}\,c\,h1^3 + \frac{1}{8}\,b\,h1^2$$

> h0 := subs(n,h):
> h0c := collect(h0,[y0,y1,y2]):

> cc0 := simplify(coeff(h0c,y0));

$$cc0 := \frac{1}{24}\,\frac{h1\,(7\,h1 + 9\,h2)}{h1 + h2}$$

> cc1 := simplify(coeff(h0c,y1));

$$cc1 := \frac{1}{24}\,\frac{(2\,h1 + 3\,h2)\,h1}{h2}$$

> cc2 := simplify(coeff(h0c,y2));

$$cc2 := -\frac{1}{12}\,\frac{h1^3}{h2\,(h1 + h2)}$$

>
>