

```

> asadi1017za07
> restart;
>  $T(x, y) = u(x) \cdot v(y);$ 

$$T(x, y) = u(x) v(y) \quad (1)$$

>  $diff(T(x, y), x, x) + diff(T(x, y), y, y);$ 

$$\frac{\partial^2}{\partial x^2} T(x, y) + \frac{\partial^2}{\partial y^2} T(x, y) \quad (2)$$

>  $u(x) := \sum_{i=0}^2 c[i] \cdot x^i;$ 

$$u(x) := x^2 c_2 + x c_1 + c_0 \quad (3)$$

>  $v(y) := \sum_{i=0}^2 d[i] \cdot y^i;$ 

$$v(y) := y^2 d_2 + y d_1 + d_0 \quad (4)$$

>  $T(x, y) = u(x) \cdot v(y);$ 

$$T(x, y) = (x^2 c_2 + x c_1 + c_0) (y^2 d_2 + y d_1 + d_0) \quad (5)$$

>  $f(x, y) := diff((x^2 c_2 + x c_1 + c_0) (y^2 d_2 + y d_1 + d_0), x, x) + diff((x^2 c_2 + x c_1 + c_0) (y^2 d_2 + y d_1 + d_0), y, y) = 0;$ 

$$f(x, y) := 2 c_2 (y^2 d_2 + y d_1 + d_0) + 2 (x^2 c_2 + x c_1 + c_0) d_2 = 0 \quad (6)$$

>  $u(x) := unapply(u(x), x);$ 

$$u(x) := x \rightarrow x^2 c_2 + x c_1 + c_0 \quad (7)$$

>  $s1 := u(x)(0) = 0;$ 

$$s1 := c_0 = 0 \quad (8)$$

>  $s2 := u(x)(0.01) = 0;$ 

$$s2 := 0.0001 c_2 + 0.01 c_1 + c_0 = 0 \quad (9)$$

>  $v(y) := unapply(v(y), y);$ 

$$v(y) := y \rightarrow y^2 d_2 + y d_1 + d_0 \quad (10)$$

>  $s3 := v(y)(0) = 0;$ 

$$s3 := d_0 = 0 \quad (11)$$

>  $s4 := v(y)(0.01) = 100;$ 

$$s4 := 0.0001 d_2 + 0.01 d_1 + d_0 = 100 \quad (12)$$

>  $s5 := subs(x=0, y=0, f(x, y));$ 

$$s5 := 2 c_0 d_2 + 2 c_2 d_0 = 0 \quad (13)$$

>  $S := solve([s1, s2, s3, s4, s5], \{c_0, c_1, c_2, d_0, d_1, d_2\});$ 

$$S := \{c_0 = 0., c_1 = c_1, c_2 = -100. c_1, d_0 = 0., d_1 = d_1, d_2 = 1.000000 \cdot 10^6 - 100. d_1\} \quad (14)$$

>  $d_1 := 1 \quad (15)$ 

```

$$d_1 := 1 \quad (15)$$

```
> u(x) := x^2 \cdot (-100 \cdot c_1) + x \cdot c_1 :  
> v(y) := (y^2 \cdot (1.000000 10^6 - 100 \cdot d_1)) + d_1 y :  
> T(x, y) := (9.9900000 10^5 y^2 + y) (-100 x^2 + x);  
T(x, y) := (9.990000000 10^5 y^2 + y) (-100 x^2 + x) (16)  
> plot3d(T(x, y), x = -1 .. 1, y = -1 .. 1);
```

