

```

> restart;
> f := y = a*x^2 + b*x + c;
> eqs := {subs(x=z0,y=t0,f),subs(x=z8,y=t8,f),subs(x=z25,y=t25,f)};
> solve(eqs,{a,b,c});
> assign(%);
> z8 :=z0+8*sqrt(2.); z25 :=z0+25*sqrt(2.);

```

convert orthogonal gradients to vertical:

```

> t0 := 5.74476E-05*z0^3 - 4.08942E-02*z0^2 + 1.04000E+01*z0 -
1.04317E+02 + 273.15;
> t8 := 7.61156E-05*z8^3 - 5.61533E-02*z8^2 + 1.48594E+01*z8 -
6.38387E+02 + 273.15;
> t25 := -2.28334E-05*z25^3 + 1.59881E-02*(z25)^2 - 2.47382E+00*z25
+ 6.65726E+02 + 273.15;
> simplify(subs(z0=zm*1e3,c)/1e0);
> tk := simplify(a*(z0+dz)^2 + b*(z0+dz) + c);
> collect(subs(dz=dzm/1e3,z0=z0m/1e3,tk),dzm);

```

$$f := y = a x^2 + b x + c$$

$$\text{eqs} := \{ t0 = a z0^2 + b z0 + c, t8 = a z8^2 + b z8 + c, t25 = a z25^2 + b z25 + c \}$$

$$\left\{ \begin{array}{l} a = - \frac{-z0 t25 + z25 t0 + z8 t25 + z0 t8 - z8 t0 - z25 t8}{z0 z25^2 - z8 z25^2 + z8 z0^2 - z25 z0^2 + z25 z8^2 - z0 z8^2}, \\ b = \frac{-z0^2 t25 + z0^2 t8 + t0 z25^2 - t8 z25^2 + z8^2 t25 - t0 z8^2}{z0 z25^2 - z8 z25^2 + z8 z0^2 - z25 z0^2 + z25 z8^2 - z0 z8^2}, \\ c = \frac{-t0 z8 z25^2 + z8^2 z25 t0 + z0^2 z8 t25 - z0^2 z25 t8 + t8 z0 z25^2 - z8^2 z0 t25}{z0 z25^2 - z8 z25^2 + z8 z0^2 - z25 z0^2 + z25 z8^2 - z0 z8^2} \end{array} \right\}$$

$$z8 := z0 + 11.31370850$$

$$z25 := z0 + 35.35533905$$

$$t0 := 0.0000574476 z0^3 - 0.0408942 z0^2 + 10.4000 z0 + 168.833$$

$$t8 := 0.0000761156 (z0 + 11.31370850)^3 - 0.0561533 (z0 + 11.31370850)^2 + 14.8594 z0 - 197.1220799$$

$$t25 := -0.0000228334 (z0 + 35.35533905)^3 + 0.0159881 (z0 + 35.35533905)^2 - 2.47382 z0 + 851.4132552$$

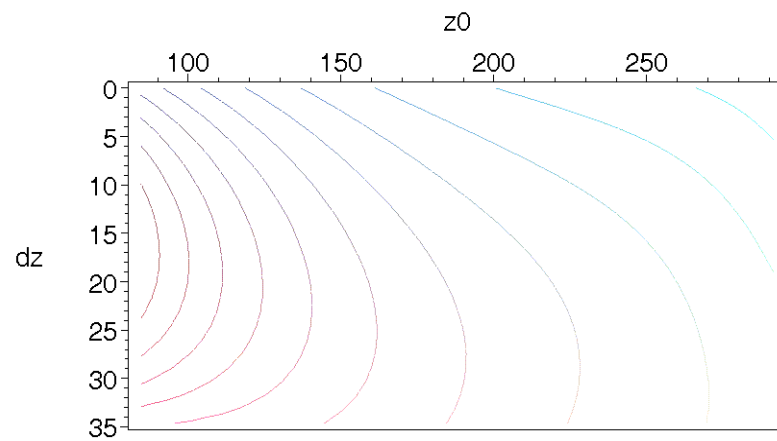
$$68225.71570 z_m + 0.1071776980 10^9 z_m^4 - 0.1630805883 10^9 z_m^5 + 168.8330000 + 0.1580175269 10^7 z_m^2 - 0.2331739615 10^8 z_m^3$$

$$tk := 10.40000000 z0 - 0.04089420000 z0^2 + 0.00005744760000 z0^3 + 168.8330000 - 57.82571570 dz + 0.5757337815 z0 dz + 2.196803250 dz^2 - 0.002372499384 z0^2 dz$$

$$-0.02574734314 z_0 dz^2 + 0.3495079912 \cdot 10^{-5} z_0^3 dz + 0.0001106727779 z_0^2 dz^2 - 0.1630805883 \cdot 10^{-6} z_0^3 dz^2$$

$$(0.2196803250 \cdot 10^{-5} - 0.2574734314 \cdot 10^{-10} z_0 m + 0.1106727779 \cdot 10^{-15} z_0 m^2 - 0.1630805883 \cdot 10^{-21} z_0 m^3) dz m^2 + (-0.05782571570 + 0.5757337815 \cdot 10^{-6} z_0 m - 0.2372499384 \cdot 10^{-11} z_0 m^2 + 0.3495079912 \cdot 10^{-17} z_0 m^3) dz m + 0.01040000000 z_0 m - 0.4089420000 \cdot 10^{-7} z_0 m^2 + 0.5744760000 \cdot 10^{-13} z_0 m^3 + 168.8330000$$

```
> plot3d(tk-273.15,dz=0..34.648,z0=84.548..291.545,axes=boxed,orientation=[0,0],style=contour,contours=[350,400,450,500,550,600,650,700,750,800,850]);
```



```
>
```