```
>
> poly:=solve((a+b*z^2)^4=0,z);
```

$$poly := \frac{\sqrt{-b\,a}}{b}, -\frac{\sqrt{-b\,a}}{b}, \frac{\sqrt{-b\,a}}{b}, -\frac{\sqrt{-b\,a}}{b}, \frac{\sqrt{-b\,a}}{b}, -\frac{\sqrt{-b\,a}}{b}, \frac{\sqrt{-b\,a}}{b}, -\frac{\sqrt{-b\,a}}{b}$$

Resenim jsou dva ctyrnasobne koreny.Jelikoz a>0 a b>0 ,tak se budu zajimat pouze o koren $\frac{\sqrt{-b\,a}}{b}$(jeho imaginarni cast je vetsi nez nula).Podle pravidla na vypocet rezidua,spoctu reziduum v tomto ctyrnasobnem polu.

```
> Pol:=sqrt(-b*a)/b:
> derivace:=diff(((z-Pol)^4*z^4)/((a+b*z^2)^4),z$3);
```

$$derivace := \frac{24\left(z-\frac{\sqrt{-b\,a}}{b}\right)z^4}{(a+b\,z^2)^4} + \frac{144\left(z-\frac{\sqrt{-b\,a}}{b}\right)^2 z^3}{(a+b\,z^2)^4} - \frac{288\left(z-\frac{\sqrt{-b\,a}}{b}\right)^2 z^5\,b}{(a+b\,z^2)^5} + \frac{144\left(z-\frac{\sqrt{-b\,a}}{b}\right)^3 z^2}{(a+b\,z^2)^4} - \frac{864\left(z-\frac{\sqrt{-b\,a}}{b}\right)^3 z^4\,b}{(a+b\,z^2)^5} + \frac{960\left(z-\frac{\sqrt{-b\,a}}{b}\right)^3 z^6\,b^2}{(a+b\,z^2)^6} + \frac{24\left(z-\frac{\sqrt{-b\,a}}{b}\right)^4 z}{(a+b\,z^2)^4} - \frac{384\left(z-\frac{\sqrt{-b\,a}}{b}\right)^4 z^3\,b}{(a+b\,z^2)^5} + \frac{1200\left(z-\frac{\sqrt{-b\,a}}{b}\right)^4 z^5\,b^2}{(a+b\,z^2)^6} - \frac{960\left(z-\frac{\sqrt{-b\,a}}{b}\right)^4 z^7\,b^3}{(a+b\,z^2)^7}$$

```
> derivace:=simplify(%);
```

$$derivace := -24\left(-b\,z+\sqrt{-b\,a}\right)z\left(-34\,b\,a^3\sqrt{-b\,a}\,z^2+90\,b^2\,a^2\sqrt{-b\,a}\,z^4+z^8\,b^4\sqrt{-b\,a} + 9\,z^7\,b^4\,a-34\,b^3\,a\sqrt{-b\,a}\,z^6+a^4\sqrt{-b\,a}-9\,b\,z\,a^4+71\,z^3\,b^2\,a^3-71\,z^5\,b^3\,a^2\right) \Big/ \left(b^3\,(a+b\,z^2)^7\right)$$

```
> Reziduum:=(1/6)*limit(derivace,z=Pol);
```

$$Reziduum := -\frac{\sqrt{-b\,a}}{32\,a^2\,b^3}$$

```
>
> Integral:=(1/2)*(2*Pi*I*Reziduum);
```

$$Integral := \frac{\frac{-1}{32} I \pi \sqrt{-b\,a}}{a^2\,b^3}$$

Protoze a>0 a b>0 ,je mozno psat Integral= $\frac{1\,\pi}{32\,b^2\,a\,\sqrt{ab}}$

```
> simplify(1/32*Pi/(b^2*a*sqrt(ab)));
```

$$\frac{\pi}{32\,b^2\,a\,\sqrt{ab}}$$

```
>
>
```