```
Simplify[(1 + h A2) f - (f0 - (1 + h A2) g)/(1 + h A1) - g h A2 + O[h]^3]
```

$$(f - f0 + g) + (A2\, f + A1\, (f0 - g))\, h - A1\, (A1\, (f0 - g) + A2\, g)\, h^2 + O[h]^3$$

```
Collect[%, f]
```

$$-f0 + g + A1\, (f0 - g)\, h - A1\, (A1\, (f0 - g) + A2\, g)\, h^2 + f\, (1 + A2\, h)$$

```
z = f - g
```

$$f - g$$

```
M = 1 + h (A1 + A2)
```

$$1 + (A1 + A2)\, h$$

```
M1 = 1 + h A1
```

$$1 + A1\, h$$

```
M2 = 1 + h A2
```

$$1 + A2\, h$$

```
z0 = f0 - g0
```

$$f0 - g0$$

```
sol = f0/M;
```

```
g + (z0 - M g + g0)/M - sol + O[h]^2
```

$$O[h]^2$$

```
g + (z0 - M g + g0)/(M2 M1) - sol + O[h]^2
```

$$O[h]^2$$

```
g + ((z0 - M1 g + g0)/M1 - M2 g + g)/M2 - sol + O[h]^2
```

$$(-g + g0) + (A2\, g - A2\, g0)\, h + O[h]^2$$

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```
Exit[]
```

```
v = vs + (1 - μ) g; z = zs + (1 - μ) g;
```

```
Simplify[M1 v - z0 + μ M g - g0]
```

$$-g0 + M1\, vs - z0 + g\, (M1 + M\, \mu - M1\, \mu)$$

```
Simplify[M2 z - v]
```

$$-\text{vs} + \text{M2}\ \text{zs} + \text{g}\ (-1 + \text{M2} + \mu - \text{M2}\ \mu)$$

```
Simplify[-g0 + M1 vs - z0 + g (M1 + M μ - M1 μ) - vs + M2 zs + g (-1 + M2 + μ - M2 μ)]
```

$$-\text{g0} - \text{vs} + \text{M1}\ \text{vs} - \text{z0} + \text{M2}\ \text{zs} + \text{g}\ (-1 + \text{M1} + \text{M2} + \mu + \text{M}\ \mu - \text{M1}\ \mu - \text{M2}\ \mu)$$