```
→ garbage_collect();
(%o1) true
→ m1:15;
  m2:50;
  m3:10;
  g:-10;
  x;
  y;
  S;
m1 15
m2 50
m3 10
g -10
(%o6) x
(%o7) y
(%o8) S
→ xp;
  yp;
  Sp;
  xpp;
  ypp;
(%o9) xp
(%o10) yp
(%o11) Sp
(%o12) xpp
(%o13) ypp
→ L:0.5·(m1+m2)·((16/9)·yp^2+(8/3)·yp·xp+xp^2)+0.5·m3·(xp^2+yp^2)-m1·g·((4/3)·y+x)-m3·g·y;
```

$$L \quad 32.5\left(\frac{16\ yp^2}{9}+\frac{8\ xp\ yp}{3}+xp^2\right)+5.0\ (yp^2+xp^2)+150\left(\frac{4\ y}{3}+x\right)+100\ y$$

```
→ Ldx:diff(L,xp);
```

$$Ldx \quad 32.5\left(\frac{8\ yp}{3}+2\ xp\right)+10.0\ xp$$

```
→ Ldy:diff(L,yp);
```

$$Ldy \quad 32.5\left(\frac{32\ yp}{9}+\frac{8\ xp}{3}\right)+10.0\ yp$$

```
→ dtLdx:32.5·(8·ypp/3+2·xpp)+10.0·xpp;
```

$$dtLdx \quad 32.5\left(\frac{8\ ypp}{3}+2\ xpp\right)+10.0\ xpp$$

```
→ dtLdy:32.5·(32·ypp/9+8·xpp/3)+10·ypp;
```

$$dtLdy \quad 32.5\left(\frac{32\ ypp}{9}+\frac{8\ xpp}{3}\right)+10\ ypp$$

```
→ G1:dtLdx-m1·g;
```

$$G1 \quad 32.5\left(\frac{8\ ypp}{3}+2\ xpp\right)+10.0\ xpp+150$$

```
→ G2:dtLdy-4·m1·g/3-m3·g;
```

$$G2 \quad 32.5\left(\frac{32\ ypp}{9}+\frac{8\ xpp}{3}\right)+10\ ypp+300$$

```
→ LOES:solve([G1,G2],[xpp,ypp]);
  I;
```

```
rat: replaced 10.0 by 10/1 = 10.0
rat: replaced 32.5 by 65/2 = 32.5
rat: replaced 32.5 by 65/2 = 32.5
```

$$LOES \quad \left[\left[xpp=\frac{1290}{343},ypp=-\left(\frac{1710}{343}\right)\right]\right]$$

```
(%o22) I
→ xpp:rhs(LOES[1][1]);
```

$$xpp \quad \frac{1290}{343}$$

```
→ ypp:rhs(LOES[1][2]);
```

$$ypp \quad -\left(\frac{1710}{343}\right)$$

```
→ Spp:4·ypp/3+xpp;
```

$$Spp \quad -\left(\frac{990}{343}\right)$$