```
> eq1:=m*v0=m*v+M*V;
```

$$eq1 := m\,v0 = m\,v + M\,V$$

```
> eq2:=m/2*v0^2=m/2*v^2+M/2*V^2;
```

$$eq2 := \frac{1}{2}\,m\,v0^2 = \frac{1}{2}\,m\,v^2 + \frac{1}{2}\,M\,V^2$$

```
> sol:=solve({eq1,eq2},{v,V});
```

$$sol := \{\,v = v0,\ V = 0\,\},\ \left\{v = \frac{(m - M)\,v0}{m + M},\ V = 2\,\frac{m\,v0}{m + M}\right\}$$

```
> assign(sol[2]);
> v;
```

$$\frac{(m - M)\,v0}{m + M}$$

```
> V;
```

$$2\,\frac{m\,v0}{m + M}$$

```
> eq1;
```

$$m\,v0 = \frac{m\,(m - M)\,v0}{m + M} + 2\,\frac{M\,m\,v0}{m + M}$$

```
> eq2;
```

$$\frac{1}{2}\,m\,v0^2 = \frac{1}{2}\,\frac{m\,(m - M)^2\,v0^2}{(m + M)^2} + 2\,\frac{M\,m^2\,v0^2}{(m + M)^2}$$

```
> simplify({eq1,eq2});
```

$$\left\{m\,v0 = m\,v0,\ \frac{1}{2}\,m\,v0^2 = \frac{1}{2}\,m\,v0^2\right\}$$

```
> limit(v,M=infinity);
```

$$-v0$$

```
> y:=v/v0;
```

$$y := \frac{m - M}{m + M}$$

```
> M:=m*x;
```

$$M := m\,x$$

```
> y;
```

$$\frac{m - m\,x}{m + m\,x}$$

```
> simplify(");
```

$$-\frac{-1 + x}{1 + x}$$

```
> plot(y,x=0..10);
>
```