\[\begin{gathered}

tab\;til\;friktion\;lige\;stykke \\

v(s)\; = \;\sqrt {{{\sqrt {\frac{{{E\_{kin}} \cdot 2}}{m}} }^2} - 2 \cdot \frac{{\mu \cdot m \cdot g \cdot \cos \left( \alpha \right)}}{m} \cdot s} \\

\Updownarrow \\

v(s)\; = \;\sqrt {\frac{{{E\_{kin}} \cdot 2}}{m} - 2 \cdot \mu \cdot g \cdot s} \\

\\

tab\;til\;h{\o}jden\;uden\;friktion \\

{E\_{kin,1}} + {E\_{pot,1}} = {E\_{kin,2}} + {E\_{pot,2}} \\

\Updownarrow \\

\frac{1}{2} \cdot m \cdot {v\_1}^2 + m \cdot g \cdot {h\_1} = \frac{1}{2} \cdot m \cdot {v\_2}^2 + m \cdot g \cdot {h\_2} \\

\Updownarrow \\

\frac{1}{2} \cdot m \cdot {v\_1}^2 - m \cdot g \cdot {h\_2} = \frac{1}{2} \cdot m \cdot {v\_2}^2 \\

\Updownarrow \\

\frac{{\frac{1}{2} \cdot m \cdot {v\_1}^2 - m \cdot g \cdot {h\_2}}}{{\frac{1}{2} \cdot m}} = {v\_2}^2 \\

\Updownarrow \\

{v\_2}^2 = {v\_1}^2 - g \cdot {h\_2} \\

\Updownarrow \\

{v\_2} = \sqrt {{v\_1}^2 - g \cdot {h\_2}} \\

\\

\end{gathered} \]

\[\begin{gathered}

tab\;til\;h{\o}jden\;uden\;friktion \\

{E\_{kin,1}} + {E\_{pot,1}} = {E\_{kin,2}} + {E\_{pot,2}} \\

\Updownarrow \\

{E\_{kin,1}} + m \cdot g \cdot {h\_1} = \frac{1}{2} \cdot m \cdot {v\_2}^2 + m \cdot g \cdot {h\_2} \\

\Updownarrow \\

{E\_{kin,1}} - m \cdot g \cdot {h\_2} = \frac{1}{2} \cdot m \cdot {v\_2}^2 \\

\Updownarrow \\

\frac{{{E\_{kin}} - m \cdot g \cdot {h\_2}}}{{\frac{1}{2} \cdot m}} = {v\_2}^2 \\

\Updownarrow \\

\frac{{\left( {{E\_{kin}} - m \cdot g \cdot {h\_2}} \right) \cdot 2}}{m} = {v\_2}^2 \\

\Updownarrow \\

{v\_2} = \sqrt {{v\_1}^2 - g \cdot {h\_2}} \\

\Updownarrow \\

v = \sqrt {\frac{{2 \cdot \left( {{E\_{kin}} - {E\_{pot}}} \right)}}{m}} \\

\\

tab\;til\;friktion\;p{\aa}\;rampe \\

{a\_{d,2}} = \mu \cdot g \cdot \cos \left( {\theta ({s\_2})} \right) \\

\\

\Delta {v\_2}(s)\; = \;\sqrt {{v\_1}^2 + 2 \cdot {a\_{d,2}} \cdot {s\_2}} \\

\Updownarrow \\

\Delta {v\_2}({s\_2}) = {v\_1} - \sqrt {{v\_1}^2 + 2 \cdot \mu \cdot g \cdot \cos \left( {\theta ({s\_2})} \right) \cdot {s\_2}} \\

\\

samlet\;tab\;p{\aa}\;rampe \\

\\

{v\_2} = \sqrt {{v\_1}^2 - g \cdot {h\_2}} - {v\_1} - \sqrt {{v\_1}^2 + 2 \cdot \mu \cdot g \cdot \cos \left( {\theta ({s\_2})} \right) \cdot {s\_2}} \\

\\

\end{gathered} \]