Bevegelseslikningene — Ekstraoppgaver

1.	$v_0 = 2\frac{m}{s}$	$a = 3\frac{m}{s^2}$	$t = 5s$	Finn v
2.	$v_0 = 2\frac{m}{s}$	$a = 3\frac{m}{s^2}$	$v = 5\frac{m}{s}$	Finn t
3.	$v_0 = 2\frac{m}{s}$	$v = 3\frac{m}{s}$	$t = 5s$	Finn s
4.	$v_0 = 2\frac{m}{s}$	$v = 3\frac{m}{s}$	$s = 5m$	Finn t
5.	$v_0 = 1\frac{m}{s}$	$a = 2\frac{m}{s^2}$	$t = 3s$	Finn s
6.	$s = 5m$	$t = 2s$	$a = 3\frac{m}{s^2}$	Finn v_0
7.	$a = 2\frac{m}{s^2}$	$v = 3\frac{m}{s}$	$v_0 = 1\frac{m}{s}$	Finn s

(Vi antar eksakte tall)

Brudden brøk

eks. $$\frac{\frac{2}{3}}{\frac{4}{5}} = \frac{\frac{2}{3}\cdot\frac{5}{4}}{\frac{4}{5}\cdot\frac{5}{4}} = \frac{\frac{2\cdot5}{3\cdot4}}{\frac{4\cdot5}{5\cdot4}} = \frac{\frac{2\cdot5}{3\cdot4}}{\frac{20}{20}} = \frac{\frac{2\cdot5}{3\cdot4}}{1} = \frac{2\cdot5}{3\cdot4}$$

eks. $$\frac{\frac{m^2}{s^2}}{\frac{m}{s^2}} = \frac{m^2}{s^2}\cdot\frac{s^2}{m} = m$$

Regel: $$\frac{\frac{a}{b}}{\frac{c}{d}} = \frac{a}{b}\cdot\frac{d}{c}$$

Kap. 1 Løsning Bevegelseslikningene

1. $v = v_0 + at$

$v = 2\frac{m}{s} + 3\frac{m}{s^2} \cdot 5s = (2 + 15)\frac{m}{s} = \underline{17\frac{m}{s}}$

2. $v = v_0 + at$

$(v - v_0) = at$

$\frac{(v - v_0)}{a} = t \qquad t = \frac{(5\frac{m}{s} - 2\frac{m}{s})}{3\frac{m}{s^2}} = \frac{3\frac{m}{s}}{3\frac{m}{s^2}} = \underline{1s}$

3. $s = \frac{1}{2}(v_0 + v) \cdot t = \frac{1}{2} \cdot (2\frac{m}{s} + 3\frac{m}{s}) \cdot 5s = \frac{1}{2} \cdot 5\frac{m}{s} \cdot 5s = \underline{12,5m}$

4. $s = \frac{1}{2}(v_0 + v) \cdot t \quad | \cdot 2$

$2s = (v_0 + v) \cdot t$

$\frac{2s}{(v_0 + v)} = t \qquad t = \frac{2 \cdot 5m}{(2\frac{m}{s} + 3\frac{m}{s})} = \frac{10m}{5\frac{m}{s}} = \underline{2s}$

5. $s = v_0 t + \frac{1}{2} a t^2$

$s = 1\frac{m}{s} \cdot 3s + \frac{1}{2} \cdot 2\frac{m}{s^2} \cdot (3s)^2 = 3m + 1\frac{m}{s^2} \cdot 9s^2 = 3m + 9m = \underline{12m}$

6. $s = v_0 t + \frac{1}{2} a t^2$

$s - \frac{1}{2} a t^2 = v_0 t$

$\frac{s - \frac{1}{2} a t^2}{t} = v_0$

$v_0 = \frac{5m - \frac{1}{2} \cdot 3\frac{m}{s^2} \cdot (2s)^2}{2s} = \frac{5m - \frac{1}{2} \cdot 3\frac{m}{s^2} \cdot 4s^2}{2s} = \frac{5m - 6m}{2s} = \frac{-1m}{2s} = \underline{-0,5\frac{m}{s}}$

7. $2as = v^2 - v_0^2$

$s = \frac{v^2 - v_0^2}{2a}$

$s = \frac{(3\frac{m}{s})^2 - (1\frac{m}{s})^2}{2 \cdot 2\frac{m}{s^2}} = \frac{9\frac{m^2}{s^2} - 1\frac{m^2}{s^2}}{4\frac{m}{s^2}} = \frac{8\frac{m^2}{s^2}}{4\frac{m}{s^2}} = \underline{2m}$