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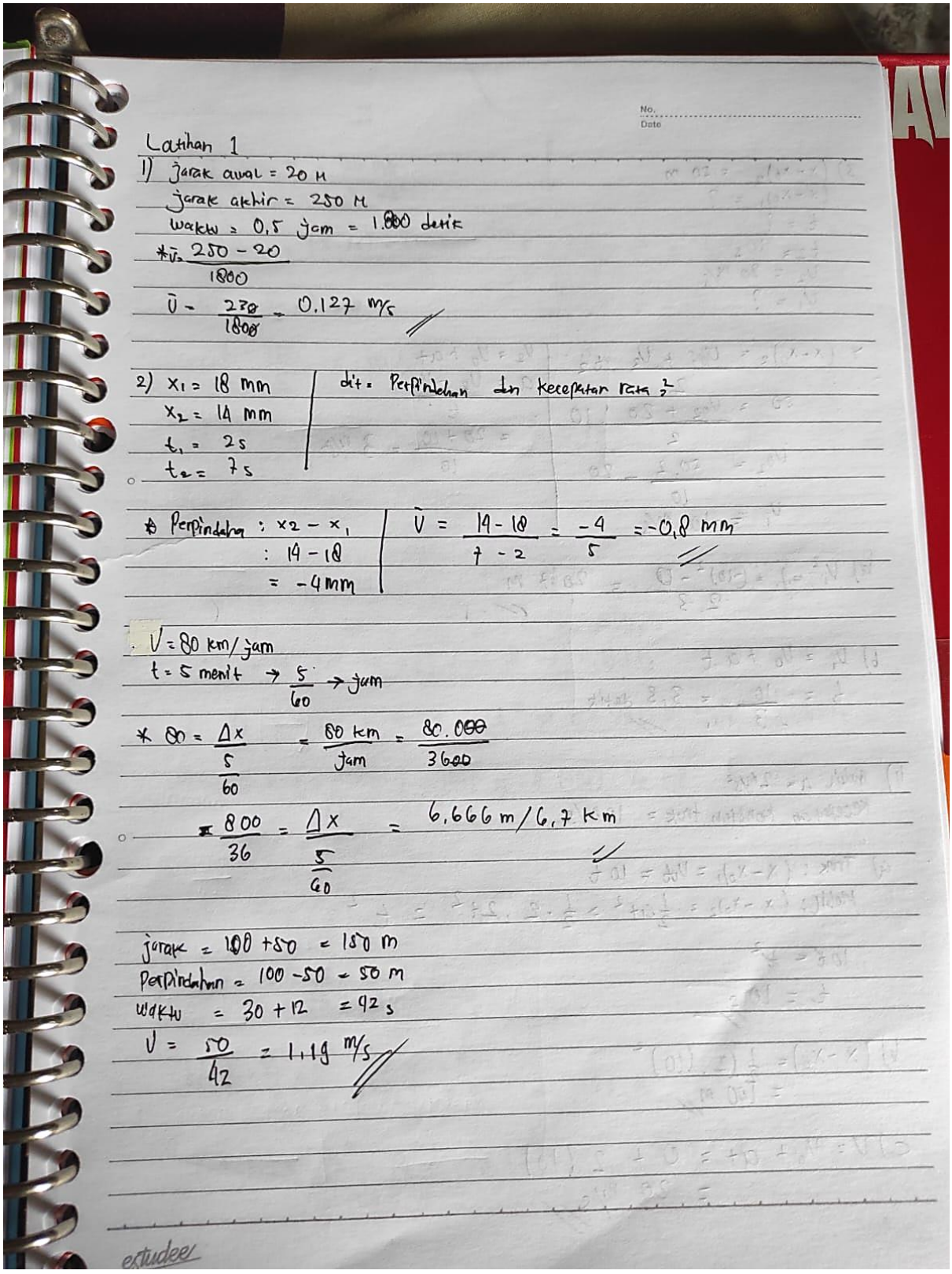

Latihan 1

1) jarak awal = 20 M
jarak akhir = 250 M
waktu = 0,5 jam = 1.800 detik
$\bar{v} = \frac{250 - 20}{1800}$
$\bar{v} = \frac{230}{1800} = 0.127$ m/s

2) $x_1 = 18$ mm
$x_2 = 14$ mm
$t_1 = 2$ s
$t_2 = 7$ s

dit: Perpindahan dan kecepatan rata-rata

* Perpindahan : $x_2 - x_1$
: $14 - 18$
$= -4$ mm

$\bar{v} = \frac{14 - 18}{7 - 2} = \frac{-4}{5} = -0,8$ mm

V = 80 km/jam
t = 5 menit → $\frac{5}{60}$ → jam

* $80 = \frac{\Delta x}{\frac{5}{60}} = \frac{80 \text{ km}}{\text{jam}} = \frac{80.000}{3600}$

$\frac{800}{36} = \frac{\Delta x}{\frac{5}{60}} = 6,666$ m / 6,7 km

jarak = 100 + 50 = 150 m
Perpindahan = 100 - 50 = 50 m
waktu = 30 + 12 = 42 s
$V = \frac{50}{42} = 1,19$ m/s

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3) $(x-x_0)_2 = 50$ m
$(x-x_0)_1 = ?$
$t_1 = ?$
$t_2 = 10$ s
$v_2 = 20$ m/s
$v_1 = ?$

* $(x-x_0)_2 = \frac{v_{0_2} + v_2}{2} \cdot t_2$

$50 = \frac{v_{0_2} + 20}{2} \cdot 10$

$v_{0_2} = \frac{50 \cdot 2}{10} - 20$

$v_1 = -10$ m/s

$v_2 = v_0 + at$

$a = \frac{v_2 - v_0}{t}$

$= \frac{20 + 10}{10} = 3$ m/s$^2$

a) $(x-x_0)_1 = \frac{(-10)^2 - 0}{2 \cdot 3} = 16{,}67$ m //

b) $v_1 = v_0 + at$

$t = \frac{10}{3} = 3{,}3$ detik //

4) Mobil $a = 2$ m/s$^2$
Kecepatan konstan truk = 10 m/s

a) Truk : $(x-x_0)_1 = v_0 t = 10t$
Mobil : $(x-x_0)_2 = \frac{1}{2} a t^2 = \frac{1}{2} \cdot 2 \cdot t^2 = t^2$

$10t = t^2$

$t = 10$ s //

b) $(x-x_0) = \frac{1}{2} \cdot 2 \cdot (10)^2$
$= 100$ m //

c) $v = v_0 + at = 0 + 2(10)$
$= 20$ m/s //

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5) 1. Kijang $V_0 = 150$ m/s
Polisi $a = 5{,}0$ m/s²

a) $t = ?$

Kijang : $(x - x_0) = V_0 \cdot t = 150t$ | Polisi : $(x - x_0) = \frac{1}{2}at^2 \rightarrow \frac{5}{2}t^2$

$150t = \frac{5}{2}t^2$

$t = \frac{150}{\frac{5}{2}} = 60$ s //

b) $(x - x_0) = 1/2 \cdot 5 \cdot 3600 = 9000$ m //

2. $a = 4$ m/dt²
$s = 250$ m
$v_t = 0$

a) $V_0^2 = 0^2 - 2 \cdot 4 \cdot 250$
$V_0 = \pm 44{,}72 \rightarrow V_0 = 44{,}72$ m/dt //

b) $= 1/4 \cdot (0 - 44{,}72) = -11{,}18 \rightarrow 11{,}18$ dt //

3. a) $x = V_0 \cdot t + 1/2 \cdot a \cdot t^2 \rightarrow t = 1/2(-V_0 \pm \sqrt{V_0^2 - a \cdot (x) \, 1/2 \cdot a}$

$= t = \frac{1}{9{,}8}\left(-15{,}2 \pm \sqrt{(-15{,}2)^2 - 4\,(-125) \cdot 1/2 \cdot 9{,}8}\right)$

$t = + 3{,}73$ dt //

$V = 15{,}2 + 9{,}8 \cdot 3{,}73 = 51{,}75$ m/s //

4. a) $V = V_0 + at$
$= 0 + 38{,}9 \cdot 9 = 350{,}1$

b) $x = V_0 \cdot t + 1/2 \cdot a \cdot t^2$
$= 0 \cdot g + 1/2\,38{,}9\,g^2 = 1575{,}45$

$(x_2 - x_1) = \frac{(V_2^2 - V_1^2)}{2g} \rightarrow \frac{(1575{,}45^2 - 350{,}1^2)}{2 \cdot 38{,}9} = 7829{,}02$ //

Sistem Operasi

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6) $h_1 = 36,6\ m$
$h_2 = 12,2\ m$
$t = 2\ s$

a) $(y - y_0)_1 = V t + 1/2\ g t^2$
$12,2 - 36,6 = 2V + 1/2 \cdot 10 \cdot 4$
$-24,4 = 2V + 20$
$-2V = 44,4$
$V = -22,2$

$V_2^2 = V_0^2 - 2g(y - y_0)$
$V^2 = (-22,2)^2 - [2 \cdot 10 (0 - 12,2)]$
$V^2 = 492,84 + 244$
$V^2 = 736,84$
$V = \pm 27,14\ m/s$

b) $V_2 = V_0 - gt$
$-27,14 = -22,2 - 10t$
$10t = -22,2 + 27,14$
$10t = 4,94$
$t = 0,494$

$t = 2 + 0,494$
$= 2,494\ s$

7) $y_0 = 50\ m$
$g = 10\ m/s^2$
$V_{01} = 0\ m/s$

* $y - y_0 = V_{01} \cdot t_1 - 1/2\ g t^2$
$0 - 50 = 1/2 \cdot 10 \cdot t^2$
$t_1 = \sqrt{\frac{50}{5}} = 10\ s$

$t_2 = t_1 - 1$
$= 5 - 1$
$= 4\ s$

$y - y_0 = V_0 t_2 - 1/2\ g t_2^2$
$0 - 50 = V_0 (4) - 1/2 \cdot 10 \cdot (4)^2$
$V_0 = \frac{-50 + 80}{40}$
$= \frac{30}{4}$
$= \frac{15}{2}$
$= 7,5\ m/s$

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