Ahmad Syaiful Akbar 2019130079 S3E

No
Date

1. Sebuah truk 2000 kg melawanan saling mendekati dengan sebuah mobil bermasa 900 kg, Jika $v_1$ bernilai 10 m/s dan $v_2$ bernilai 90 m/s seperti pada gambar, Maka tentukanlah kelajuan truk dan mobil tersebut setelah bertabrakan jika:

Diket : $m_1 = 2000$ kg
$v_1 = 10$ m/s  $v \rightarrow (+)$
$m_2 = 900$ kg  $v \leftarrow (-)$
$v_2 = 90$ m/s

Dit. A. $e = 0$
B. $e = 1$
C. $e = 0,1$

Jawab:

A. Tabrakan tidak lenting sama sekali

$$v_1' = \frac{(m_1 - e \times m_2) \cdot v_1 + (m_2 + e \times m_2) v_2}{(m_1 + m_2)}$$

$$= \frac{(2000 - 0 \times 900) \cdot 10 + (100 + 0 \times 100) \cdot 90}{(2000 + 900)}$$

$$= \frac{20.000 + 16.000}{2900} = 15 \text{ m/s}$$

$$v_2' = v_1' - e \times v_2 + e \times v_1$$
$$= 15 - (0 \times 90) + (0 \times 10) = 15 \text{ m/s}$$

B. Tabrakan lenting sempurna (e = 1)

$$V_1' = \frac{(2000 - (1 \times 100)).10 + (100 + (1 \times 100))10}{(2000 + 100)}$$

$$= \frac{\$6.000 + 32.000}{2100} = 20 \text{ m/s}$$

$$V_2 = V_1' - e \times V_2 + e \times V_1$$
$$= 20 - 1 \times 40 + 1 \times 10$$
$$= 20 - 40 + 10$$
$$= -10 \text{ m/s}$$

C. Tabrakan lenting sebagian dengan nilai (e = 0,9)

$$V_1' = \frac{(2000 - (0,9 \times 100)).10 + (100 + (0,9 \times 100))10}{2000 + 100}$$

$$= \frac{10.900 + 22.900}{2100} = 17 \text{ m/s}$$

$$V_2' = 17 - 0,9 \times 40 + 0,9 \times 10$$
$$= 17 - 16 + 9$$
$$= 5 \text{ m/s}$$

Ahmad Syaiful Akbar 2041350029 5 SE

No
Date

```
% get data

m1 = str2double(get(handles.edit1,'String'));
v1 = str2double(get(handles.edit2,'String'));
m1 = str2double(get(handles.edit3,'String'));
v2 = str2double(get(handles.edit4,'String'));

is = get(handles.radiobutton1,'Value');
tl = get(handles.radiobutton2,'Value');
ise = get(handles.radiobutton3,'Value');

IF (is == 1)
    e = 1
elseIF (tl == 1)
    e = 0;
else
    e = str2double(get(handles.edit5,'String'));
end

% rumus

    v1a = ((m1-e*m2)*v1+(m2+e*m2)*v2)/(m1+m2);
    v2a = v1a-e*v2+e*v1;

% Set output
set(handles.edit6,'String',v1a);
set(handles.edit7,'String',v2a);
```