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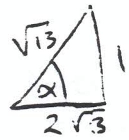

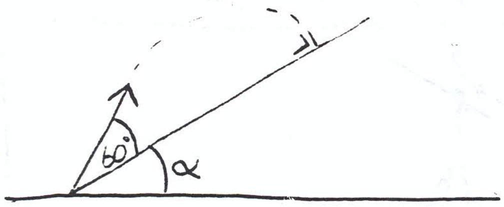

$\tan\alpha = \dfrac{1}{2\sqrt{3}}$

$\cos\alpha = \dfrac{2\sqrt{3}}{\sqrt{13}}$

$\sin\alpha = \dfrac{1}{\sqrt{13}}$

$\vec{u} = u\cos 60\,\vec{i} + u\sin 60\,\vec{j}$

$\vec{g} = \ -g\sin\alpha \ -g\cos\alpha$

$\vec{V} = (u\cos 60 - g\sin\alpha t)\vec{i} \ + \ (u\sin 60 - g\cos\alpha t)\vec{j}$

$\vec{R} = (u\cos 60 t - \frac{g}{2}\sin\alpha t^2)\vec{i} \ + (u\sin 60 t - \frac{g}{2}\cos\alpha t^2)\vec{j}$

when particle strikes plane $R(t)\vec{j} = 0$

$\dfrac{u\sqrt{3}}{2}t - \dfrac{g}{2}\dfrac{2\sqrt{3}}{\sqrt{13}}t^2 = 0$

$t = 0$ OR $\dfrac{u\sqrt{3}}{2} - \dfrac{g}{2}\dfrac{2\sqrt{3}}{\sqrt{13}}t = 0$

$\dfrac{u\sqrt{3}}{2} = \dfrac{g}{2}\dfrac{2\sqrt{3}t}{\sqrt{13}}$

$\dfrac{u\sqrt{13}\sqrt{3}}{2\sqrt{3}g} = t \quad \therefore \quad t = \dfrac{\sqrt{3}u}{2g}$

$\vec{V}(t)\vec{i} = 0$?

$\dfrac{u}{2} - \dfrac{g}{\sqrt{13}}\left(\dfrac{\sqrt{13}u}{2g}\right)$

$\dfrac{u}{2} - \dfrac{u}{2} = 0$

$\therefore \quad \dfrac{u}{2}\vec{i} + u\dfrac{\sqrt{3}}{2}\vec{j}$

$\cancel{\therefore \vec{V}(t) = 0\vec{i} + \left(\frac{u\sqrt{3}}{2}\left[\frac{u\sqrt{3}}{2g}\right] - \frac{g}{} \frac{2\sqrt{3}}{\sqrt{13}}\left[\frac{u\sqrt{13}}{2g}\right]\right.}$

$\cancel{= 0\vec{i} + \left(\frac{u^2\sqrt{3}\sqrt{13}}{4g}\right) - (}$

$= 0\vec{i} + \left(\dfrac{u\sqrt{3}}{2} - g\dfrac{2\sqrt{3}}{\sqrt{13}}\left(\dfrac{u\sqrt{13}}{2g}\right)\right)\vec{j}$

$= \left(\dfrac{u\sqrt{3}}{2} - \dfrac{u\sqrt{3}}{1}\right)\vec{j}$

$= 0\vec{i} - \dfrac{u\sqrt{3}}{2}\vec{j}$

$\cancel{m_1u_1 + m_2u_2 = m_1v_1 + m_2u_2}$

$\cancel{v_1 - v_2 = -e(u_1 - u_1)}$