Physics
Quiz # 8

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Q1.
(c)

Q2.
(a)

Q3.
$m = 10kg$
$F_h = F_x + F_{h1}$
$F_x = 500 \times \frac{4}{5} = 400N$
$F_y = 500 \times \frac{3}{5} = 300N$
$F_x = 400N - 300N = 100N$
$F_{h1} = 20t$
$t = 0$
$F_{h1} = 20t = 0$
$F_h = F_x + F_{h1} = 100N$
$a = \frac{F}{m} = \frac{100N}{10kg} = 10m/s^2$

$t = 2$
$F_{h1} = 20 \times 2 = 40N$
$F_h = F_x + F_{h1} = 140N$
$a = \frac{F}{m} = \frac{140N}{10kg} = 14m/s^2$
$da = 14m/s^2 - 10m/s^2 = 4m/s^2$
$v = 24m/s$

Q4.

(a)

$m = 10kg$

$F_y = 200N$

$F_x = 40N - 30N = 10N$

$a = F/m = 1m/s^2$

$v^2 = {v_0}^2 + 2a(s - s_0)$

$v^2 = 3^2 + 2(8 - 0)$

$v^2 = 25$

$v = 5m/s$

(b)

$F_0 = 2.5s = 0$

$F_1 = 2.5 \times 8 = 20N$

$a_0 = F/m = 0$

$a_1 = F/m = 2m/s^2$

$ads = vdv$

$\int_0^8 \frac{s}{4} sds = \int_3^v vdv$

$\frac{v^2}{2} - \frac{9}{2} = 8$

$v = 5m/s$

Q5.

$m = 10kg, G = F_y = m \times g = 98N$

$\mu_k = 0.2$

$F_f = 98 \div \sin 30° = 196N$

$F_x = 196 \times \cos 30° = 98\sqrt{3}N$