Physics Quiz # 3

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Q1.
(d)Vector

Q2.
(c) Speed and it is a scalar

Q3.
Q4.

$v_x = \frac{dx}{dt} = 2t - 4$

$v_y = \frac{dy}{dt} = 6cos2t$

$a_x = \frac{dv_x}{dt} = 2$

$a_y = \frac{dv_y}{dt} = -12sin2t$

$v = \sqrt{{v_x}^2 + {v_y}^2}$

$= \sqrt{(2 \times 3 - 4)^2 + (6\cos(2 \times 3))^2}$

$= 6.29m/s$

$a = \sqrt{{a_x}^2 + {a_y}^2}$

$= \sqrt{2^2 + (-12sin(2 \times 3))^2}$

$= 2.36m/s^2$

Q5.
(d)Parabola

Q6.

$v_a = 10/s$

$v_y = v \sin\theta$
$v_x = v \cos\theta$

$v_y = 10 \sin 30 = 5$
$v_x = 10 \cos 30 = 5\sqrt{3}$

$v_{yf} = v_y + at$
$0 = 5 - 9.8t$
$t = 0.51s$
a)
$h = vt + \frac{1}{2}at^2$
$= 5 \times 0.51 - \frac{1}{2} \times 9.8 \times 0.51^2$
$= 1.275m$

$h = vt + \frac{1}{2}at^2$
$-1.275 = -\frac{1}{2} \times 9.8t^2$
$t = 0.51s$
b)
$x_c = v_x t$
$x_c = 5\sqrt{3} \times (1.02)$
$x_c = 8.83m$

c)
$v_{yf} = v_y + at$
$v_{yf} = -9.8 \times 0.51$
$= -5m/s$

$v = \sqrt{{v_x}^2 + {v_y}^2}$
$v = \sqrt{5\sqrt{3}^2 + -5^2}$

$v = 10 m/s$