

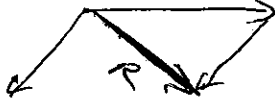
9. (1)



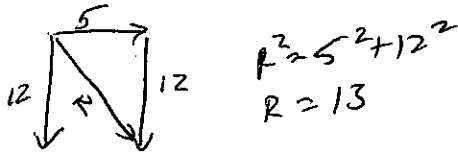
10. (3)

Max = 100N + 25N = 125N when acting in same direction
 Min = 100N - 25N = 75N " " " opposite "

11. (4)



12. (2)



13. (1)

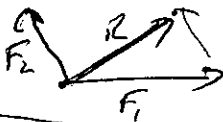
Momentum is a vector. (You need to memorize 6 vectors from notes...)

14. (1)

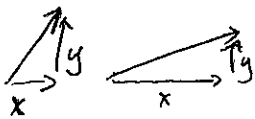
15. (2)

Displacement = how far from starting point.

16. (3)



17. (2)



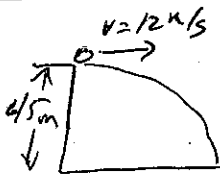
as angle decreases, y decreases, and x increases.

18. (4)

$\frac{x}{a=0} \mid \frac{y}{a=9.8 \text{ m/s}^2}$

it will have a constant speed in x ($a=0$) and speed up in y as it falls...

19. (3)



x	y
$v_i = 12$	$v_i = 0$
$a = 0$	$a = 9.8$
	$d = 45$
	$t = ?$

$$d = v_i t + \frac{1}{2} a t^2$$

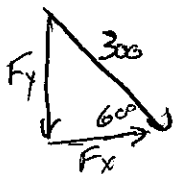
$$45 = 0t + \frac{1}{2} (9.8) t^2$$

$$45 = 4.9 t^2$$

$$9.18 = t^2$$

$$t = 3.03 \text{ s}$$

20. (2)



$$F_y = 300 \sin 60$$

$$F_y = 260 \text{ N}$$

21. (2)

Distance = total distance
 Displacement = how far from starting point

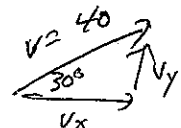
distance is greater than displacement.

22. (2) accel = slope
 $a = \frac{\Delta v}{\Delta t} = \frac{25-10}{2} = \frac{15}{2} = 7.5 \text{ m/s}^2$

23. (4) average speed = midpoint = $\frac{10+25}{2} = \frac{35}{2} = 17.5 \text{ m/s}$

24. (3) Distance = area $\frac{b \cdot h}{2} + b \cdot h = \frac{(1)(10)}{2} + (2)(10)$
 $= 5 + 20 = \boxed{25}$

25. (1) Accel = slope. Greatest acceleration = steepest.

26. (4)  $v_x = 40 \cos 30 = 34.6 \text{ m/s}$

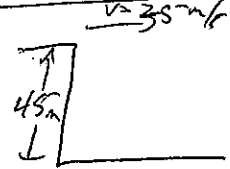
27. (3) How far = displacement - just read from graph. At 3s, $d_{\text{total}} = 3$

28. (4) velocity = slope $\bar{v} = \frac{\Delta d}{\Delta t} = \frac{3}{2} = 1.5 \text{ m/s}$

29. (2) At rest = slope of zero.

30. (1) $\bar{v} = \text{slope} = \frac{\Delta d}{\Delta t} = \frac{3-0}{3-0} = 1 \text{ m/s}$

31. (3) accelerating = curved line (constant speed = straight line)

32. (2) 

x	y
$v_i = 25$	$v_f = 0$
$a = 0$	$a = 9.8$
$d = 45$	$t = ?$

$$d = v_i t + \frac{1}{2} a t^2$$

$$45 = 25t + \frac{1}{2}(9.8)t^2$$

$$45 = 4.9t^2 + 25t$$

$$9.2 = t^2$$

$$t = 3.03 \text{ s}$$

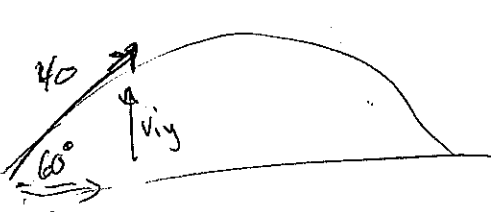
$$d = v_i t + \frac{1}{2} a t^2$$

$$d = (25)(3.03) + 0$$

$$d = \boxed{75 \text{ m}}$$

33. (1) The time only depends on the height - shortest cliff = shortest time.

34. (4) Acceleration = 9.8 downward - gravity.

35. (3) 

x	y
$v_i = 34.6$	$v_i = 34.6$
$a = 0$	$a = -9.8$
$t = 7.1 \text{ s}$	$t = 7.1 \text{ s}$
$d = ?$	$d = ?$

$$v_x = 40 \cos 60 = 20$$

$$v_y = 40 \sin 60 = 34.6$$

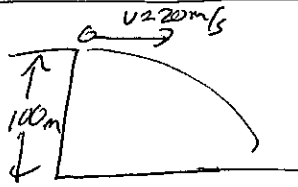
$$d = v_i t + \frac{1}{2} a t^2$$

$$d = (34.6)(7.1) + 0$$

$$d = \boxed{142 \text{ m}}$$

36. ② Farthest distance is at 45° .

37. ①



x	y
$a = 0$	$a = 9.8$
$v_i = 20$	$v_i = 0$
	$d = 100$
	$t = ?$

$$d = v_i t + \frac{1}{2} a t^2$$
$$100 = 20t + \frac{1}{2} (9.8) t^2$$
$$100 = 4.9t^2$$
$$20.4 = t^2$$
$$\boxed{4.51_s = t}$$

38. ① accel = gravity, downward

Long Answer

