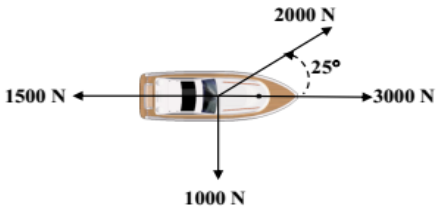
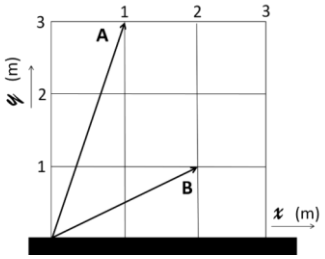
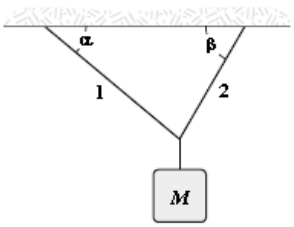
Take g = 9.8 ms^{-2} where ever needed

1	The quantity with the same units as force times time, Ft, with dimensions MLT^{-1} is: **A)** mv^2r **B)** ma **C)** mvr **D)** mv **E)** mv^2/r	D
2	An electron, starting from rest and moving with a constant acceleration, travels 2 cm in 5 ms. The magnitude of its acceleration is: **A)** 1.6×10^3 m/s^2 **B)** 3.3×10^3 m/s^2 **C)** 1.11×10^3 m/s^2 **D)** 0.8×10^4 m/s^2 **E)** 2.5×10^4 m/s^2	A
3	A rocket moves straight upward from the ground surface, starting from rest with an acceleration of 50 m/s^2 for 4 s. At this time, its engine stopped and the rocket continued to move further upwards before falling eventually. Total height reached by the rocket from ground surface is: **A)** 2650 m **B)** 1880 m **C)** 2441 m **D)** 3200 m **E)** 2000 m	C
4	Acceleration of a ball that is thrown upward: **A)** increases **B)** decreases **C)** zero **D)** remain constant **E)** increases then decreases	D
5	Starting at point A Ahmed walks 25 km in a direction 30° south of west and then walks 30 km toward the north to point B. The distance between A and B is: **A)** 36 km **B)** 48.5 km **C)** 15.7 km **D)** 32.8 km **E)** 28 km	E
6	If **B**+**A**=6**i**+**j** and **B**-**A** = -4**i**+7**j**. The magnitude of **B** is: **A)** 5.1 **B)** 4.1 **C)** 5.8 **D)** 5.4 **E)** 7.2	B
7	The four forces shown in the figure act on a boat. The magnitude and the direction of the resultant of these four forces are:  **A)** 3316 N, 357° **B))** 1000 N, 23° **C)** 3000 N, 5° **D)** 2300 N, 230° **E)** 860 N, 0°	A
8	An object is thrown at the same initial velocity at two different angles with the ground as shown in the picture. The ratio between the horizontal range of A and B. (i.e. R_A/R_B):  **A)** 1.5 **B)** 0.5 **C)** 1.33 **D)** 0.75 **E)** 2.3	D
9	A particle moving in the xy plane with a constant acceleration has a velocity of 3**i**-2**j** m/s at t=0. At t = 3 s, the particle's velocity is 9**i**+7**j** m/s. The acceleration of the particle is: **A)** -2**i**-3**j** m/s^2 **B)** 6**i**+9**j** m/s^2 **C)** 6**i**-4**j** m/s^2 **D)** 3**i**-2**j** m/s^2 **E)** 2**i**+3**j** m/s^2	E

10	A rock (A) is thrown horizontally and another similar rock (B) is dropped simultaneously (from rest) from the same height. If air resistance is neglected, which rock hits the ground first? **A)** Both rocks hit the ground at the same time **B)** Rock (A) will hit the ground 9.8 s later than (B) **C)** Rock (A) will hit the ground 9.8 s earlier than (B) **D)** Rock (B) will hit the ground 4.9 s earlier than (A) **E)** Rock (B) will hit the ground 4.9 s later than (A)	A
11	A racing car moving at a constant tangential speed of 44 m/s on a circular track takes one lap around the track in 45 seconds. The centripetal acceleration of the car is: **A)** 8.4 m/s^2 **B)** 6 m/s^2 **C)** 10 m/s^2 **D)** 0 m/s^2 **E)** 7.7 m/s^2	B
12	The force of the wind on the sails (شراع) of a sailboat (مركب شراعية) is 390 N north. The water exerts a force of 180 N east. If the mass of the boat is 270 kg, the magnitude of its acceleration is: **A)** 1.14 m/s^2 **B)** 1.69 m/s^2 **C)** 4.32 m/s^2 **D)** 2.76 m/s^2 **E)** 1.59 m/s^2	E
13	If $\alpha = 40°$, $\beta = 60°$, and M = 4 kg, determine the tension in string 1:  **A)** 20 N **B)** 17 N **C)** 25 N **D)** 15 N **E)** 30 N	A
14	A block moves up a 45° incline with constant speed under the action of a force of 15 N applied parallel to the incline. If the coefficient of kinetic friction is 0.3, the weight of the block is: **A)** 16.3 N **B)** 10.4 N **C)** 7.8 N **D)** 21.2 N **E)** 5.4 N	A
15	The apparent weight of a fish in an elevator is greatest when the elevator: **A)** moves downward at constant velocity. **B)** accelerates upward. **C)** accelerates downward. **D)** moves upward at constant velocity. **E)** is not moving.	B

The End