Extra Credit Assignment

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1   Simple Case

Suppose a drone quad-copter has four engines that each provide thrust vectors straight upward. The mass of the drone is 1.2 kg. How many Newtons does each engine provide if the drone is hovering steadily?

Divide this answer by g and multiply by 1000. This converts the thrust into *grams*, which gives the effective payload of each engine.

2   Harder Case

Suppose two engines are damaged when the drone collides with something. They are now tilted at an angle of 10 degrees with respect to vertical. The engines form a square, and the damaged (tilted) engines are across from each other on the square. Calculate the acceleration vector of the drone.