The gear train shown below has $N_2 = 24$ teeth, $N_3 = 18$ teeth, $N_4 = 30$ teeth, and $N_6 = 36$ teeth. The gears are all of the same module, and are supported on a carrier 5.

(a) If the speed of gear 7 is 150 rev/min clockwise, and the input shaft $a$ is driven counterclockwise at 250 rev/min, what is the speed and direction of rotation of shaft $b$?