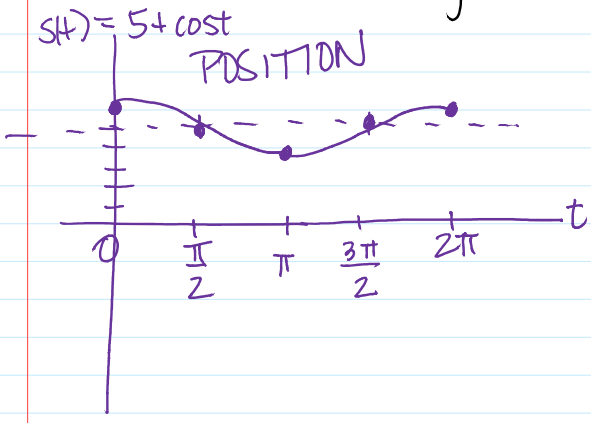
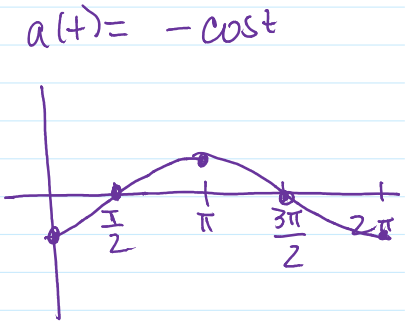
3.5 extra problem

Friday, September 22, 2017 9:59 AM

Describe the motion of a particle if its position on the x-axis is modeled by $s(t) = 5 + \cos t$ for $[0, 2\pi]$.





The particle starts at a position of 6 and moves left for time in (0, 3.14) to a position of 4. At 3.14 seconds, the particle stops and changes direction because the velocity changes from negative to positive. From (3.14, 6.28) the particle moves right to a position of 6. For (0,1.57) the particle speeds up because $v(t) < 0$ and decreasing; for (1.57, 3.14) the particle slows down because $v(t) < 0$ and increasing; for (3.14, 4.71) the particle speeds up because $v(t) > 0$ and increasing; for (4.71, 6.28) the particle slows down because $v(t) > 0$ and decreasing.