

(1)[5 points] Find the accumulated amount at the end of 6 years of a continuous annuity if the annual interest rate is  $r = 0.05$  and payments are made at the rate of  $50t$  dollars per year.

(2)[5 points] Find the average profit  $P$  over  $0 \leq q \leq 150$  where profit as a function of quantity  $q$  is

$$P(q) = 369q - 2.1q^2 - 400 .$$

(3)[5 points] An investment fund has initial balance \$5,000 and earns continuously compounding interest at an annual rate of 6%. The resulting balance at time  $t$  years is  $B(t) = 5000e^{0.06t}$ . Find the average fund balance over the first two years.