

(1) Water flows from the bottom of a storage tank at a rate of  $r(t) = 200 - 4t$  liters per minute, where  $0 \leq t \leq 50$ . Find the amount of water that flows from the tank during the first 10 minutes.

[4]

(2) Determine  $\int \frac{(\ln x)^2}{x} dx$

[3]

(3) Determine  $\int_0^{\pi} \sec^2(t/4) dt$

[4]

(4) Determine  $\int x \cos(5x) dx$

[4]