Chp6 Integration and its application

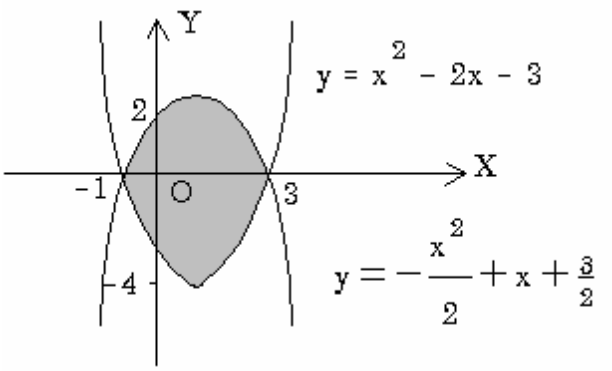
1. Find the following integrals;
   a) $\int x^{\frac{2}{3}}\,dx$
   b) $\int(2x-3)^4\,dx$
   c) $\int \frac{3x^2+2}{\sqrt{x}}\,dx$
   d) $\int \sqrt[3]{x^3+3x^2}\,(x^2+2x)dx$
   e) $\int \frac{x^2-1}{x\sqrt{x}+\sqrt{x}}\,dx$

2. Evaluate the following definite integrals
   a) $\int_0^1 (x^4+2x^3+4x+10)dx$
   b) $\int_0^8 x^{\frac{2}{3}}\,dx$
   c) $\int_1^2 1\,dx$
   d) $\int_{-8}^8 \sqrt[3]{2+x^{\frac{2}{3}}}\,dx$
   e) $\int_0^{64} (x^{\frac{1}{2}}+5x^{\frac{-2}{3}})\,dx$

3. Find the area under the graph of the function $y=x^2+4x$ between x=o and x=3

4. Find the area between the function $y=6x-x^2$ and x axis from x=1 to x=5

5. Find the shaded area between these two curves



6. Given market demand and supply functions as Q=10 – P and Q= -2 + P, find
    a) Consumer Surplus
    b) Producer Surplus
    c) Total surplus

7. Given a marginal cost function of a firm as MC= Q^3+2Q^2+2Q+5 and the firm has fixed costs= 150 baht. Find Average Cost function, Average fixed cost function and Average Variable cost function

8. A marginal propensity to consume is given as 0.25. If a disposable income is zero, the consumption level is equal to 100. Find a consumption function.

9. Given demand function as P=45 – 0.5Q, find consumer surplus when p=32.5

10. Given supply function as $P=(Q+3)^2$, find producer surplus when P=81

11. For a consumer with demand function as $Q=5-P^{1/3}$, find

    a)Consumer Surplus at price $p_0=1$
    b)Consumer Surplus at price $p_1=27$
    c)Change in consumer surplus from the price change $p_0=1$ to $p_1=27$

12. Given the following demand and supply functions for a particular product

$Q_d=5 – P/3$ and $P=(Q_s+1)^2$, find consumer and producer surpluses at the equilibrium of this market.