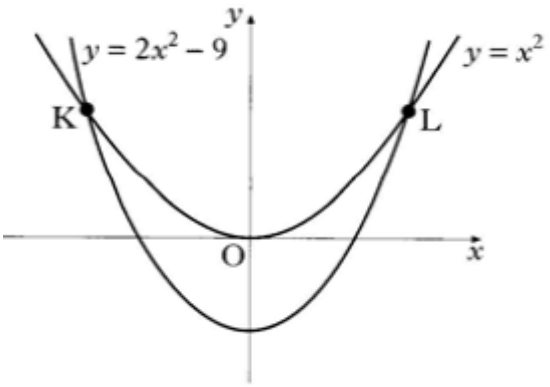
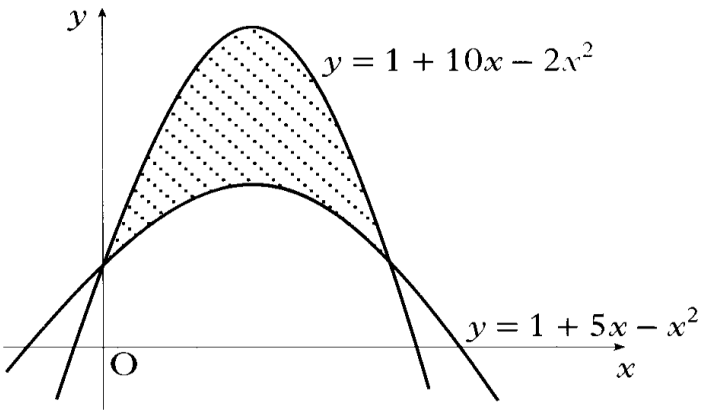
	Integration - Definite integrals and area between curves	
1.	Evaluate $\int_1^4 \sqrt{x}\ dx$	4
2.	Evaluate $\int_1^2 \frac{u^2+2}{2u^2}\ du$	5
3.	Find the value of $\int_0^2 \sin(2x+1)\ dx$	4
4.	The curves with equations $y = x^2$ and $y = 2x^2 - 9$ intersect at K and L as shown. Calculate the coordinates of K and L and hence calculate the area between the curves 	8
5.	Calculate the shaded area enclosed between the parabolas with equations $y = 1 + 10x - 2x^2$ and $y = 1 + 5x - x^2$ 	6

	Integration - Answers	
1	Write in index form $\int_1^4 x^{1/2}\,dx$ Integrate $\left[\frac{2}{3}x^{3/2}\right]_1^4$ Substitute limits $\left(\frac{2}{3}(4)^{3/2}\right)-\left(\frac{2}{3}(1)^{3/2}\right)$ Evaluate area $\frac{14}{3}$	
2	First term in index form $\int_1^2 \frac{1}{2}+\cdots.\quad du$ Second term in index form $\int_1^2 \ldots\ldots+u^{-2}\,du$ Integrate $\left[\frac{1}{2}u-u^{-1}\right]_1^2$ Substitute limits $\left(\frac{1}{2}(2)-\frac{1}{2}\right)-\left(\frac{1}{2}(1)-1\right)$ Evaluate area 1	
3	Integrate trig function -cos(2x+1) Differentiate 2*x* $\left[-\frac{1}{2}\cos(2x+1)\right]_0^2$ Substitute limits $\left(-\frac{1}{2}\cos(2(2)+1)\right)-\left(-\frac{1}{2}\cos(2(0)+1)\right)$ Evaluate area 0.13	
4	Find the points of intersection between the curves $x^2 = 2x^2 - 9$ $9 - x^2 = 0,\ (3 + x)(3 - x) = 0$ K (-3, 9) and L (3,9) Know to integrate between limits $\int_{-3}^3 \ldots\ dx$ Use "upper – lower" $\int_{-3}^3 (9-x^2)\ dx$ Integrate $\left[9x-\frac{1}{3}x^3\right]_{-3}^3$ Substitute limits $\left(9(3)-\frac{1}{3}3^3\right)-(9(-3)-\frac{1}{3}(-3^3))$ Evaluate area 36	
5	Find the points of intersection between the curves $1 + 10x - 2x^2 = 1 + 5x - x^2$ $5x - x^2 = 0 \quad x(5 - x) = 0$ $x = 0$ and $x = 5$ Know to integrate between limits $\int_0^5 \ldots\ dx$ Use "upper – lower" $\int_0^5 (5x-x^2)\ dx$ Integrate $\left[\frac{5}{2}x^2-\frac{1}{3}x^3\right]_0^5$ Substitute limits $\left(\frac{5}{2}5^2-\frac{1}{3}5^3\right)-(\frac{5}{2}0^2-\frac{1}{3}0^3)$ Evaluate area $\frac{125}{6}$	