MATH 16B

TEST 2 REVIEW PROBLEMS

① FIND THE FOLLOWING DEFINITE INTEGRALS:

A) $\int_1^e \frac{30}{x(2\ln x+3)^2}\,dx$

B) $\int_0^4 \frac{3x}{\sqrt{2x+1}}\,dx$

C) $\int_1^{e^3} \frac{\ln x}{x^2}\,dx$

D) $\int_0^{\pi/3} \frac{10\sec\theta\tan\theta}{2\sec\theta-1}\,d\theta$

② FIND $\int x^2\cos 5x\,dx$. (YOU MAY USE ANY CORRECT METHOD.)

③ A PARTICLE MOVING IN A STRAIGHT PATH HAS A SPEED OF $\frac{2t}{\sqrt{3t^2+1}}$ CM/SEC AFTER t SEC. FIND ITS AVERAGE SPEED FOR THE FIRST 4 SECONDS.

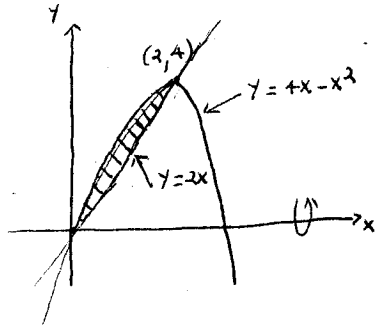
④ FIND THE AREA OF THE REGION BOUNDED BY THE GRAPHS OF $x = y^2 - 6y$ AND $x = -y^2$.

⑤ FIND $\int \frac{x^2}{(2x+5)^3}\,dx$.

⑥ FIND THE AREA OF THE REGION BOUNDED BY THE GRAPHS OF $y = 2x$, $y = \frac{18}{x}$, $x = 1$, AND $x = 9$.

⑦ SET UP, BUT DO NOT EVALUATE, AN INTEGRAL FOR THE VOLUME OF THE SOLID OBTAINED BY REVOLVING THE REGION BOUNDED BY THE CURVES $y = 3x^2$ AND $y = 6x$ ABOUT THE y-AXIS.

⑧ CALCULATE THE VOLUME OF THE SOLID GENERATED BY REVOLVING THE REGION BOUNDED BY THE GRAPHS OF $y = 4x - x^2$ AND $y = 2x$ AROUND THE x-AXIS.



⑨ FIND $\int_{-3}^{3} (5 + 7t^9)\sqrt{36 - t^2}\,dt$.