Integral Calculus (MATH 106)
(Quiz 1)
Time: 30 minutes

Name:

Student ID:

Group:

Note: Calculators are not allowed.

Sample 1:

[1] Let $F(x) = \int_x^{\sin\ x} \sqrt[3]{3+t^2}\ dt$, find $F'(x)$.

[2] Evaluate the integral $\int \frac{1}{x\ (3+\ln x)}$.

[3] Evaluate the integral $\int \frac{7x^2\ 7^{x^3}}{\sqrt{2+7^{x^3}}}$.

[4] If $y = x^{\sin\ x}$, find y'.

[5] Evaluate the integral $\int x\sqrt{x-1}\ dx$.

[6] Find the derivative $\frac{d}{dx}\int_2^{\sin\ x} \frac{1}{1-t^2}\ dt$.

[7] Find the derivative of the function using the logarithm function $y = \frac{\sqrt{x}\cos\ x}{(x+1)\sin\ x}$.

Sample 2:

[1] Let $F(x) = \int_{4x^2}^{\ln\ x} \sqrt{1+e^t}\ dt$, find $F'(x)$.

[2] Evaluate the integral $\int \frac{(3+\ln x)}{x}$.

[3] Evaluate the integral $\int 7x^2\ 7^{x^3}\sqrt{2+7^{x^3}}$.

[4] If $y = (\sin\ x)^{x^3}$, find y'.

[5] Evaluate the integral $\int x^2\sqrt{x-1}\ dx$.

[6] Find the derivative $\frac{d}{dx}\int_{x+1}^3 \sqrt{t+1}\ dt$.

[7] Find the derivative of the function using the logarithm function $y = \frac{(x^2+1)\cos\ x}{(x+1)\sin\ x}$.

Sample 3:

[1] Let $F(x) = \int_{2x}^{3x^2} \frac{1}{\sqrt[5]{3+t^2}}\, dt$, find $F'(x)$.

[2] Evaluate the integral $\int \frac{1}{x\ (3+\ln x^2)^5}$.

[3] Evaluate the integral $\int \frac{10x\ 3^{x^2}}{\sqrt[5]{2+3^{x^2}}}$.

[4] If $y = (3+\sin\ x)^{\sin\ x}$, find y'.

[5] Evaluate the integral $\int \frac{\tan\ x}{\cos^2\ x}\, dx$.

[6] Find the derivative $\frac{d}{dx}\big(x \int_x^{x^2} (t^3-1)\, dt\big)$.

[7] Find the derivative of the function using the logarithm function $y = \frac{(x^2+1)(x+1)}{(x^3+1)}$.

Sample 4:

[1] Let $F(x) = \int_5^{\cos^2\ x} \sqrt{3+t}\, dt$, find $F'(x)$.

[2] Evaluate the integral $\int 7\frac{5^{(\tan\ x+2)}}{\cos^2\ x}$.

[3] Evaluate the integral $\int \frac{3+(1+x)e^x}{x(3+e^x)}$.

[4] If $y = (1+x^2)^{\sin\ x}$, find y'.

[5] Evaluate the integral $\int \sin^5\ x\ \cos\ x\, dx$.

[6] Find the derivative $\frac{d}{dx}\int_1^{x^2} \frac{1}{t^3+1}\, dt$.

[7] Find the derivative of the function using the logarithm function $y = \frac{(x^2+1)\sqrt{x+1}}{(x^2+3)}$.

Sample 5:

[1] Let $F(x) = \int_{2x}^{e^{\sin\ x}} \sqrt{1+\ln t}\ dt$, find $F'(x)$.

[2] Evaluate the integral $\int 10\dfrac{5^{(\cot\ x+3)}}{\sin^2\ x}$.

[3] Evaluate the integral $\int \dfrac{x\ln x+1}{x(x\ \ln x)}$.

[4] If $y = (\sin\ x)^{(1+x^2)}$, find y'.

[5] Evaluate the integral $\int \dfrac{x}{\sqrt{2x^2+1}}\ dx$.

[6] Find the derivative $\frac{d}{dx}\int_1^x \sqrt{\cos\ t}\ dt$.

[7] Find the derivative of the function using the logarithm function $y = \dfrac{(x^2+1)(x-1)}{(x^3+1)(x+5)}$.