

Math102 Term182
Sec2 Quiz 4

Name	ID	Sr
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Instruction: CIRCLE one answer and SHOW all your work to get full mark

Q1) $\int_{\pi/4}^{\pi/2} \cot^4 x \, dx =$

a) $\frac{\pi}{4} - \frac{2}{3}$

b) $\frac{\pi}{2}$

c) $\frac{\pi}{4}$

d) $\frac{\pi}{2} - \frac{2}{3}$

e) $\frac{\pi}{4} + \frac{1}{3}$

Q2) $\int_1^2 \sqrt{-x^2 + 2x + 3} \, dx =$

a) $\frac{\pi}{6}$

b) $\frac{\pi}{6} + \frac{\sqrt{3}}{2}$

c) $\frac{\pi}{3} + \frac{\sqrt{3}}{2}$

d) $\frac{\pi}{3} + \frac{1}{2}$

e) $\frac{\pi}{3} - \frac{\sqrt{3}}{2}$

$$\text{Q3) } \int \frac{12 \cos x}{(\sin x + 2)(1 - \sin x)} dx =$$

a) $-4 \ln \left| \frac{\sin x + 2}{1 - \sin x} \right| + C$

b) $3 \ln \left| \frac{\sin x + 2}{1 - \sin x} \right| + C$

c) $\ln \left| \frac{\sin x + 2}{1 - \sin x} \right| + C$

d) $4 \ln \left| \frac{\sin x + 2}{1 - \sin x} \right| + C$

e) $\ln \left| \frac{\sin x + 2}{1 + \sin x} \right| + C$

$$\text{Q4) } \int \frac{1}{(1 + \sqrt{x})^2} dx =$$

a) $\ln(1 + \sqrt{x}) + C$

b) $\ln(1 + \sqrt{x}) + \frac{2}{1 + \sqrt{x}} + C$

c) $\ln(1 + \sqrt{x}) - \frac{2}{1 + \sqrt{x}} + C$

d) $2 \ln(1 + \sqrt{x}) + \frac{2}{1 + \sqrt{x}} + C$

e) $\ln(1 + \sqrt{x}) + \frac{1}{1 + \sqrt{x}} + C$

Math102 Term182
Sec5 Quiz 4

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Instruction: CIRCLE one answer and SHOW all your work to get full mark

Q1) $\int_0^{\pi/2} \cos^5 x \, dx =$

a) $\frac{28}{15}$

b) $\frac{8}{15}$

c) $\frac{31}{20}$

d) $\frac{1}{15}$

e) $\frac{7}{20}$

Q2) $\int_0^2 x^2 \sqrt{4 - x^2} \, dx =$

a) $\frac{\pi}{4} - 1$

b) $\frac{5\pi}{4}$

c) $\frac{\pi}{8}$

d) $\frac{\pi}{4}$

e) π

$$\text{Q3) } \int_0^1 \frac{x-4}{x^2-5x+6} dx =$$

a) $2 \ln 2 + \ln 3$

b) $-3 \ln 2 + \ln 3$

c) $-\ln 2 - \ln 3$

d) $\ln 2 + \ln 3$

e) $2 \ln 2 - \ln 3$

$$\text{Q4) } \int \frac{10}{(x-1)(x^2+9)} dx =$$

a) $\ln|x-1| - \frac{1}{2} \ln(x^2+9) - \frac{1}{3} \tan^{-1}\left(\frac{x}{3}\right) + C$

b) $\ln|x-1| - \ln(x^2+9) - \tan^{-1}\left(\frac{x}{3}\right) + C$

c) $\ln|x-1| + \frac{1}{2} \ln(x^2+9) + \frac{1}{3} \tan^{-1}\left(\frac{x}{3}\right) + C$

d) $\ln|x-1| - \ln(x^2+9) - \frac{1}{3} \tan^{-1}\left(\frac{x}{3}\right) + C$

e) $\ln|x-1| - \frac{1}{2} \ln(x^2+9) - \tan^{-1}\left(\frac{x}{3}\right) + C$

Math102 Term182
Sec19 Quiz 4

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Instruction: CIRCLE one answer and SHOW all your work to get full mark

Q1) $\int_0^{\pi/2} \sqrt{\sin x} \cos^3 x \, dx =$

a) $\frac{8}{21}$

b) $\frac{136}{45}$

c) $\frac{82}{45}$

d) $\frac{8}{15}$

e) $\frac{-26}{45}$

Q2) $\int_{1/2}^1 \sqrt{x - x^2} \, dx =$

a) $\frac{\pi}{3} - 1$

b) $\frac{\pi}{8}$

c) $\frac{\pi}{8} + 1$

d) $\frac{\pi}{4} + 2$

e) $\frac{\pi}{16}$

$$\text{Q3) } \int \frac{e^x}{e^{2x} + 3e^x + 2} dx =$$

a) $-\ln \left| \frac{e^x - 1}{e^x + 2} \right| + C$

b) $\ln \left| \frac{e^x - 1}{e^x + 2} \right| + C$

c) $\ln \left(\frac{e^x + 1}{e^x + 2} \right) + C$

d) $2 \ln \left(\frac{e^x + 3}{e^x + 2} \right) + C$

e) $\ln \left(\frac{e^x - 1}{e^x - 2} \right) + C$

$$\text{Q4) } \int \frac{4}{3 - 5 \sin x} dx =$$

a) $\ln \left| \frac{\tan\left(\frac{x}{2}\right) + 3}{\tan\left(\frac{x}{2}\right) + 1} \right| + C$

b) $\frac{\tan(x/2) + 3}{\tan(x/2) + 1} + C$

c) $\ln \left| \frac{\tan x + 3}{\tan x + 1} \right| + C$

d) $\ln \left| \frac{\tan\left(\frac{x}{2}\right) + 3}{3 \tan(x/2) + 1} \right| + C$

e) $\ln \left| \frac{\tan(x/2) - 3}{3 \tan(x/2) - 1} \right| + C$

Math102 Term182
Sec24 Quiz 4

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Instruction: CIRCLE one answer and SHOW all your work to get full mark

Q1) $\int_0^{\pi/4} \tan^5 x \sec^6 x \, dx =$

a) $\frac{\pi}{4}$

b) $\frac{1}{10}$

c) $\frac{31}{60}$

d) $\frac{7}{20}$

e) $\frac{8}{30}$

Q2) $\int_1^{5/2} \sqrt{-x^2 + 2x + 8} \, dx =$

a) $3\pi + \frac{9}{4}\sqrt{3}$

b) $\frac{3}{2}\pi + \frac{\sqrt{3}}{4}$

c) $\frac{3}{4}\pi + \frac{9}{2}\sqrt{3}$

d) $\frac{3}{4}\pi + \frac{9}{8}\sqrt{3}$

e) $\frac{9}{2}\pi + \frac{9}{8}\sqrt{3}$

$$\text{Q3) } \int \frac{\cos x}{\sin x - \sin^2 x} dx =$$

$$\text{a) } \ln \left| \frac{\sin x}{1 - \sin x} \right| + C$$

$$\text{b) } 2 \ln \left| \frac{\sin x}{\sin x - 1} \right| + C$$

$$\text{c) } 3 \ln \left| \frac{\sin x}{1 - \sin x} \right| + C$$

$$\text{d) } -\ln \left| \frac{\sin x}{\sin x + 1} \right| + C$$

$$\text{e) } \ln \left| \frac{\sin x}{\sin x + 1} \right| + C$$

$$\text{Q4) } \int \frac{\sqrt{x-9}}{x} dx =$$

$$\text{a) } 2\sqrt{x-9} - \tan^{-1}(\sqrt{x-9}) + C$$

$$\text{b) } 2\sqrt{x-9} - 6 \tan^{-1} \left(\frac{\sqrt{x-9}}{3} \right) + C$$

$$\text{c) } 2\sqrt{x-9} - \ln(\sqrt{x-9}) + C$$

$$\text{d) } 2\sqrt{x-9} - 6 \tan^{-1}(\sqrt{x-9}) + C$$

$$\text{e) } 2\sqrt{x-9} - 18 \tan^{-1} \left(\frac{\sqrt{x-9}}{3} \right) + C$$