

Math102 Term182  
Sec2 Quiz 3

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

Q1) Using the method of cylindrical shell, the volume of the solid obtained by rotating the region bounded by the curves

$x = \sqrt{y}$ ,  $y = 2$  and the  $y$  - axis  
about the line  $y = -1$  is

a)  $\frac{88\pi}{15}\sqrt{2}$

b)  $\frac{\pi}{15}\sqrt{2}$

c)  $\frac{44\pi}{15}\sqrt{2}$

d)  $\frac{112\pi}{15}\sqrt{2}$

e)  $\frac{2\pi}{15}\sqrt{2}$

Q2) The **sum** of the numbers  $b$  for which the average value of  $f(x) = -6x^2 - 6x + 1$  becomes 1 on the interval  $[b, 0]$  is

a)  $-1$

b)  $\frac{5}{2}$

c)  $-2$

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

e)  $-\frac{7}{2}$

Q3)  $\int e^x \arctan(e^x) dx =$

a)  $e^x \arctan(e^x) + \arctan(e^x) + c$

b)  $\frac{1}{2} e^x \arctan(e^x) + e^x + c$

c)  $e^x \arctan(e^x) + 2 \ln(1 + e^{2x}) + c$

d)  $e^x \arctan(e^x) - \ln(1 + e^{2x}) + c$

e)  $e^x \arctan(e^x) - \frac{1}{2} \ln(1 + e^{2x}) + c$

Q4)  $\int_0^1 2e^{\arcsin x} dx =$

a)  $-1 + e^{\pi/2}$

b)  $e^{\pi/2}$

c)  $e - 2$

d)  $e$

e)  $1 + e^\pi$

Math102 Term182  
Sec 5 Quiz 3

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

Q1) Using the method of cylindrical shell, the volume of the solid obtained by rotating the region bounded by the curves  $y = x^3$ ,  $y = 1$  and the  $y - axis$  about the line  $y = 2$  is

a)  $\frac{6\pi}{7}$

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

c)  $\frac{15\pi}{7}$

d)  $\frac{9\pi}{14}$

e)  $\frac{15\pi}{14}$

Q2) The **sum** of the numbers  $c$  such that  $f(c)$  equals to the average value of  $f(x) = \frac{1}{\sqrt{x}}$  on the interval  $[4,9]$  is

a) 2

b)  $\frac{25}{4}$

c)  $\frac{1}{4}$

d)  $\frac{2}{5}$

e)  $\frac{5}{2}$

Q3)  $\int e^x \arcsin(e^x) dx =$

a)  $e^x \arcsin(e^x) - \sqrt{1 - e^{2x}} + C$

b)  $x \arcsin(x) + \sqrt{1 - e^x} + C$

c)  $e^x \arcsin(e^x) + 2\sqrt{1 - e^{2x}} + C$

d)  $\arcsin(e^x) - \sqrt{1 - e^{2x}} + C$

e)  $e^x \arcsin(e^x) + \sqrt{1 - e^{2x}} + C$

Q4)  $\int_0^1 2e^{\arcsin x} dx =$

a)  $-1 + e^{\pi/2}$

b)  $e^{\pi/2}$

c)  $e - 2$

d)  $e$

e)  $1 + e^\pi$

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Sec19 Quiz 3

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

Q1) Using the method of cylindrical shell, the volume of the solid obtained by rotating the region bounded by the curves  $y = e^x$ ,  $x = 0$ ,  $x = 2$  and the  $x$ -axis about the line  $x = -2$  is

a)  $2\pi(2e - 1)$

b)  $2\pi(e^2 - 3)$

c)  $\pi(3e^2 - 1)$

d)  $4\pi(e - 3)$

e)  $2\pi(3e^2 - 1)$

Q2) The **sum** of the numbers  $c$  such that  $f(c)$  equals to the average value of  $f(x) = 3x^2 + x + 1$  on the interval  $[0,2]$  is

a)  $\frac{-1+\sqrt{31}}{3}$

b) 6

c)  $\frac{-1}{3}$

d)  $\frac{-1+\sqrt{61}}{6}$

e) 2

Q3)  $\int x \arctan\left(\frac{1}{x}\right) dx =$

a)  $x^2 \arctan\left(\frac{1}{x}\right) + x - 2 \arctan(x) + c$

b)  $x^3 \arctan\left(\frac{1}{x}\right) + x + C$

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

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

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

Q4)  $\int_0^1 2e^{\arccos x} dx =$

a)  $1 + e^{\pi/2}$

b)  $e^{\pi/2}$

c)  $e - 2$

d)  $e$

e)  $-1 + e^{\pi/2}$

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Sec24 Quiz 3

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

Q1) Using the method of cylindrical shell, the volume of the solid obtained by rotating the region bounded by the curves  $x = y - y^2$  and the  $y - axis$  about the line  $y = 2$  is

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

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

c)  $\frac{\pi}{12}$

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

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

Q2) The **sum** of the numbers  $b$  for which the average value of  $f(x) = 6x^2 - 10x + 4$  becomes 7 on the interval  $[b, 0]$  is

a)  $-1$

b)  $\frac{-1}{2}$

c)  $\frac{5}{3}$

d)  $\frac{5}{2}$

e)  $-\frac{7}{2}$

Q3)  $\int \cosh(\sqrt{x}) dx =$

a)  $2\sqrt{x} \sinh(\sqrt{x}) + 2 \cosh(\sqrt{x}) + C$

b)  $\sinh(\sqrt{x}) + c$

c)  $\sqrt{x} \sinh(\sqrt{x}) + \cosh(\sqrt{x}) + C$

d)  $2\sqrt{x} \sinh(\sqrt{x}) - 2 \cosh(\sqrt{x}) + C$

e)  $\sqrt{x} \sinh(x) - \cosh(x) + C$

Q4)  $\int_0^1 2e^{\arcsin x} dx =$

a)  $-1 + e^{\pi/2}$

b)  $e^{\pi/2}$

c)  $e - 2$

d)  $e$

e)  $1 + e^{\pi}$