Quiz 3 – MA 225 B2 – Spring 2011

Instructor: Margaret Beck
TF: Man-Ho Ho
Date: April 27, 2011

Name: _____

BU ID: _____

Score: 1. _____ (out of 20)
2. _____ (out of 20)
3. _____ (out of 20)
4. _____ (out of 20)
5. _____ (out of 20)
Total: _____ (out of 100)

Instructions: Please write clearly and show all work. No credit will be given if answers are not justified. If the problem asks you to use a specific method in your solution, please make sure you do so. No credit will be given if another method is used. The point value of each problem is written in bold at the beginning of each problem.

Question 1 [**20 points**] Evaluate the integral

$$\int_C x^2 yz \mathrm{d}s$$

where C is the line segment from $(0, 2, 3)$ to $(1, 6, 4)$.

Question 2 [**20 points**] Set up, but do not evaluate, a triple integral representing the volume of the solid bounded by the surfaces $y = -x^2$, $z = -1$, $z = 1$, and $y = -4$.

Question 3 [20 points] Evaluate $\int_C \mathbf{F} \cdot \mathrm{d}\mathbf{r}$, where $\mathbf{F} = \langle y + \sin x - \ln(x^2 + y^2), 2\tan^{-1}(y/x) \rangle$ and C is the circle centered at $(2, -1)$ with radius 2.

Question 4 [20 points] Show that the integral

$$\int_C e^y \mathrm{d}x + (1 + xe^y)\mathrm{d}y$$

is independent of path.

Question 5 [20 points] Use an appropriate change of variables to evaluate

$$\iint_R \frac{x+y}{x-y} \mathrm{d}A$$

where R is the square with vertices $(0,2)$, $(-1,3)$, $(-1,1)$, and $(-2,2)$.

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where R is the square with vertices $(0,2)$, $(-1,3)$, $(-1,1)$, and $(-2,2)$.

Quiz 3 – MA 225 B4 – Spring 2011

Instructor: Margaret Beck
TF: Man-Ho Ho
Date: April 28, 2011

Name: _____

BU ID: _____

Score: 1. _____ (out of 20)
2. _____ (out of 20)
3. _____ (out of 20)
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Total: _____ (out of 100)

Instructions: Please write clearly and show all work. No credit will be given if answers are not justified. If the problem asks you to use a specific method in your solution, please make sure you do so. No credit will be given if another method is used. The point value of each problem is written in bold at the beginning of each problem.

Question 1 [**20 points**] Evaluate the integral

$$\int_C xyz^2 \mathrm{d}s$$

where C is the line segment from $(-1, 5, 0)$ to $(1, 6, 4)$.

Question 2 [**20 points**] Set up, but do not evaluate, a triple integral representing the volume of the solid bounded by the surfaces $y = x^2$, $z = 0$, $z = 4$, and $y = 9$.

Question 3 [20 points] Evaluate $\int_C \mathbf{F} \cdot \mathrm{d}\mathbf{r}$, where $\mathbf{F} = \langle y + \sin x - \ln(x^2 + y^2), 2\tan^{-1}(y/x) \rangle$ and C is the circle centered at $(-1, 3)$ with radius 3.

Question 4 [20 points] Show that the integral

$$\int_C (1 - ye^{-x})\mathrm{d}x + e^{-x}\mathrm{d}y$$

is independent of path.

Question 5 [20 points] Use an appropriate change of variables to evaluate

$$\iint_R \frac{x-y}{x+y} \mathrm{d}A$$

where R is the square with vertices $(0,2)$, $(1,1)$, $(2,2)$, and $(1,3)$.

Quiz 3 – MA 225 B5 – Spring 2011

Instructor: Margaret Beck
TF: Man-Ho Ho
Date: April 28, 2011

Name: _____

BU ID: _____

Score: 1. _____ (out of 20)
2. _____ (out of 20)
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Total: _____ (out of 100)

Instructions: Please write clearly and show all work. No credit will be given if answers are not justified. If the problem asks you to use a specific method in your solution, please make sure you do so. No credit will be given if another method is used. The point value of each problem is written in bold at the beginning of each problem.

Question 1 [**20 points**] Evaluate the integral

$$\int_C xyz^2 \mathrm{d}s$$

where C is the line segment from $(-1, 5, 0)$ to $(1, 6, 4)$.

Question 2 [**20 points**] Set up, but do not evaluate, a triple integral representing the volume of the solid bounded by the surfaces $y = x^2$, $z = 0$, $z = 4$, and $y = 9$.

Question 3 [20 points] Evaluate $\int_C \mathbf{F} \cdot \mathrm{d}\mathbf{r}$, where $\mathbf{F} = \langle y + \sin x - \ln(x^2 + y^2), 2\tan^{-1}(y/x) \rangle$ and C is the circle centered at $(-1, 3)$ with radius 3.

Question 4 [20 points] Show that the integral

$$\int_C (1 - ye^{-x})\mathrm{d}x + e^{-x}\mathrm{d}y$$

is independent of path.

Question 5 [20 points] Use an appropriate change of variables to evaluate

$$\iint_R \frac{x-y}{x+y} \mathrm{d}A$$

where R is the square with vertices $(0,2)$, $(1,1)$, $(2,2)$, and $(1,3)$.