Name: _____

Instructor: _____

Math 10560, Quiz 3 Tutorial
February 14, 2017

- The Honor Code is in effect for this quiz. All work is to be your own.
- No calculators.
- The quiz lasts for 25 Minutes .
- Be sure that your name is on every page in case pages become detached.
- Be sure that you have all 5 pages of the test.

PLEASE MARK YOUR ANSWERS WITH AN X, not a circle!

1.	(a)	(b)	(c)	(d)	(e)
2.	(a)	(b)	(c)	(d)	(e)
3.	(a)	(b)	(c)	(d)	(e)
4.	(a)	(b)	(c)	(d)	(e)

Please do NOT write in this box.

Multiple Choice _____

5. _____

Total _____

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Multiple Choice

1.(2 pts) Find the integral

$$\int_0^1 e^x x^2 \, dx$$

(a) $\frac{3}{3}$ (b) $2e + 2$ (c) $4e + 1$

(d) $e + 2$ (e) $e - 2$

2.(2 pts) Compute the integral

$$\int_0^{\pi/4} \tan^3(x) \, \sec^3(x) \, dx$$

(a) $\frac{7}{3} - \frac{31}{5}$

(b) $\frac{2^{5/2} - 1}{5} + \frac{2^{3/2} - 1}{3}$

(c) $\frac{2^{5/2} - 1}{5} - \frac{2^{3/2} - 1}{3}$

(d) $\frac{31}{5} + \frac{7}{3}$

(e) $\frac{31}{5} - \frac{7}{3}$

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3.(2 pts) Compute the integral

$$\int_0^{\pi/2} \sin^3 x \, dx$$

(a) $\frac{1}{2}$ (b) $\frac{2}{3}$ (c) -1 (d) 1 (e) $-\frac{1}{2}$

4.(2 pts)Which of the indefinite integrals shown below is equal to the indefinite integral

$$\int \frac{1}{x^2\sqrt{1+x^2}} \, dx?$$

(**Note:** A trigonometric substitution might help.)

(a) $-\int \frac{\sin\theta}{\cos^2\theta} \, d\theta$ (b) $\int \frac{\sin\theta}{\cos^2\theta} \, d\theta$ (c) $-\int \tan\theta \, d\theta$

(d) $-\int \frac{\cos\theta}{\sin^2\theta} \, d\theta$ (e) $\int \frac{\cos\theta}{\sin^2\theta} \, d\theta$

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5.(2 pts) Compute

$$\int \frac{1}{(x^2 - 2x + 2)^2}\, dx$$

Present your answer as a function of the variable x. Note the formula sheet at the back of the exam may be helpful in working out your final answer.

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The following is the list of useful trigonometric formulas:

$$\sin^2 x + \cos^2 x = 1$$

$$1 + \tan^2 x = \sec^2 x$$

$$\sin^2 x = \frac{1}{2}(1 - \cos 2x)$$

$$\cos^2 x = \frac{1}{2}(1 + \cos 2x)$$

$$\sin 2x = 2 \sin x \cos x$$

$$\sin x \cos y = \frac{1}{2}\big(\sin(x - y) + \sin(x + y)\big)$$

$$\sin x \sin y = \frac{1}{2}\big(\cos(x - y) - \cos(x + y)\big)$$

$$\cos x \cos y = \frac{1}{2}\big(\cos(x - y) + \cos(x + y)\big)$$

$$\int \sec \theta = \ln |\sec \theta + \tan \theta| + C$$

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Total _____