



Philadelphia University
Department of Basic Sciences and Mathematics



Academic Year:	2016–2017	Course Name:	Calculus 2.
Semester:	First Semester	Course Number:	250372
Exam:	1st Exam	Student Name:	_____
Exam Date:	19/11/2016	University ID:	_____
Exam Day:	Saturday	Section:	_____
Mark:	[20]	Serial:	_____

Question ONE : (12 points) Write the symbol of the correct answer in the blank.

1. [] If $\int x^2 \cos x \, dx = f(x) - \int 2x \sin x \, dx$, then $f(x) =$
- (A) $2 \sin x + 2x \cos x + C$ (B) $x^2 \sin x + C$
(C) $2x \cos x - x^2 \sin x + C$ (D) $4 \cos x - 2x \sin x + C$
2. [] If the substitution $\sqrt{x} = \sin y$ is made in the integrand of $\int \frac{\sqrt{x}}{\sqrt{1-x}} \, dx$, the resulting integral is
- (A) $2 \int \frac{\sin^2 y}{\cos y} \, dy$ (B) $\int \tan y \, dy$ (C) $2 \int \sin^2 y \, dy$ (D) $\int \sin(2x) \, dy$
3. [] If the partial fraction decomposition of $f(x) = \frac{2x^3 - 4x^2 - 10x + 14}{(x-1)(x+1)(x-2)^2}$ has the form $\frac{A}{x-1} - \frac{1}{x+1} + \frac{2}{x-2} - \frac{2}{(x-2)^2}$, then A equals
- (A) $\frac{1}{2}$ (B) $-\frac{1}{2}$ (C) -1 (D) 1
4. [] The improper integral $\int_1^{\infty} \frac{1}{(3x+1)^2} \, dx$ converges to
- (A) $\frac{1}{35}$ (B) $\frac{1}{2}$ (C) $\frac{1}{15}$ (D) $\frac{1}{12}$

Time: 50 Minutes

[1]

5. $\left[\quad \right] \int \frac{\cos^3 x}{\sin^2 x} dx =$

- (B) $\sec x + \cos x + C$

- (D) $\csc x - \cos x + C$

6. An integrand of the form $\sqrt{9 - 16x^2}$ suggests the substitution $x =$

- (D) $\frac{4}{3} \sec \theta$

Question TWO : (8 points) Evaluate each of the following integrals.

1. $\int 3x^2 \ln(x^2 + 1) \, dx.$

[illegible]

2. $\int \frac{e^x}{e^{2x} - 1} dx.$

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