Vietnam National University of Agriculture
Department of Mathematics

April 12, 2016

**Midterm Exam**
**Duration 50 minutes**

**Unauthorized materials**

**Exercise 1.** *(Using the definition of definite integrals)*

a) [1.5 pt] *Find an approximation to the integral* $\int_0^1 (1+2x)dx$ *using a Riemann sum with an equal partition* $n = 5$ *and left endpoints.*

b) [2.5 pt] *Express the integral* $\int_1^2 \frac{1}{\ln(1+x^2)}dx$ *as a limit of Riemann sums. Do not evaluate the limit.*

**Exercice 2.** *Evaluate the following integrals*

a) [1.5 pt] $\int_3^{10} \frac{\ln x}{x}$.

b) [2.5 pt] $\frac{2x+1}{x^2+4x+3}$

**Exercice 3.** [3.0 pt] *Find the average value of the function* $f(x) = x^2\sqrt{1+x^3}$ *on* $[0, 2]$.

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**Exercise 1.** *(Using the definition of definite integrals)*

a) [1.5 pt] *Find an approximation to the integral* $\int_{-1}^{0}(2-x)dx$ *using a Riemann sum with an equal partition* $n = 5$ *and left endpoints.*

b) [2.5 pt] *Express the integral* $\int_1^2 \frac{1}{\sqrt{1+x^2}}dx$ *as a limit of Riemann sum. Do not evaluate the limit.*

**Exercice 2.** *Evaluate the following integrals*

a) [1.5 pt] $\int_0^{\frac{\pi}{2}} \sin x e^{2\cos x} dx$.

b) [2.5 pt] $\frac{-5x+1}{4x^2+4x+2}$.

**Exercice 3.** [3.0 pt] *Find the average value of the function* $f(x) = x^2\sqrt{1+2x^3}$ *on* $[0, 1]$.