Mathematics II Midterm Exam Questions **A**

1) Evaluate the integral $\int \frac{1}{t^2} \sin\left(\frac{4}{t} + 3\right) dt$

A) $-\cos\left(\frac{4}{t} + 3\right) + C$

B) $4 \cos\left(\frac{4}{t} + 3\right) + C$

C) $-4 \cos\left(\frac{4}{t} + 3\right) + C$

D) $-\frac{1}{4} \cos\left(\frac{4}{t} + 3\right) + C$

E) $\frac{1}{4} \cos\left(\frac{4}{t} + 3\right) + C$

2) Find the volume of the solid generated by revolving the region about the y–axis. The region in the first quadrant bounded on the left by $y = \frac{3}{x}$, on the right by the line $x = 3$, and above by the line $y = 2$. (Washer Method)

A) 3π B) $\frac{\pi}{2}$ C) 9π D) $\frac{27}{2}\pi$ E) $\frac{9}{2}\pi$

3) Find the length of the curve $y = (9 - x^{2/3})^{3/2}$ from $x = 1$ to $x = 27$

A) 24 B) 18 C) 72 D) 36 E) $\frac{81}{2}$

4) Find the volume of the solid generated by revolving the region bounded by $y = \sqrt{\sin 5x}$, $y = 0$, $0 \le x \le \frac{\pi}{5}$ about the x–axis. (Disk Method)

A) $\frac{\pi}{5}$ B) π C) $\frac{2}{5}\pi$ D) 5π E) 2π

5) Find the derivative $\frac{d}{dx} \int_1^{\sqrt{x}} 18t^5 \, dt$

A) $18x^{5/2}$ B) $9x^2$ C) $18x^5$ D) $12x^4$ E) $3x^4 - 3$

6) Use a finite approximation to estimate the area under the graph of $f(x) = \frac{1}{x}$ between $x = 1$ and $x = 9$ using an upper sum with two rectangles of equal width.

A) $\frac{24}{5}$ B) $\frac{56}{45}$ C) $\frac{11}{5}$ D) $\frac{56}{5}$ E) $\frac{8}{15}$

7) Evaluate the integral $\int_{-6}^{6} (6 - |x|) \, dx$

A) 72 B) 54 C) 36 D) 108 E) 18

8) Evaluate the integral $\int_0^{3\pi/4} \tan\frac{x}{3}\,dx$

A) $\frac{3\sqrt{2}}{2}$ B) $\frac{-3\ln 2}{2}$ C) $-3\ln 2$ D) $\frac{3\ln 2}{2}$ E) $\frac{-3\sqrt{2}}{2}$

9) Use the shell method to find the volume of the solid generated by revolving the region bounded by $x = 8 - y^2$, $x = y^2$, $y = 0$ about the x–axis.

A) 16π B) 8π C) 2π D) 4π E) 32π

10) Find the area of the surface generated by revolving $y = \sqrt{3x - x^2}$, $0.5 \le x \le 1.5$; about x–axis.

A) 4π B) 2π C) π D) 5π E) 3π

11) Find the area enclosed by the curves : $y = x^3$, $y = 4x$

A) 8 B) 4 C) 0 D) 2 E) 16

12) Find the average value of the function $f(x) = \sqrt{16-x^2}$ on $[-4, 4]$

A) 4π B) π C) 16π D) 16 E) 8π

Answer Key
Testname: MAT2SUMMER2018

1) E
2) E
3) D
4) C
5) B
6) A
7) C
8) D
9) A
10) E
11) A
12) B