

Name: \_\_\_\_\_ Period: \_\_\_\_\_

Date: \_\_\_\_\_ Code: \_\_\_\_\_ Row: \_\_\_\_\_

**CHAPTER 6: APPLICATIONS OF INTEGRATION**

Select the correct answer. Show all work on a separate sheet of paper.

<b>1)</b> Find the area of the region bounded by the curves. $y = x^2 - 2x$ , $y = x + 4$				
A) $\frac{125}{3}$	B) $\frac{25}{3}$	C) 5	D) 20	E) $\frac{125}{6}$
<b>2)</b> Find the area of the region bounded by the curves. $y = \cos x$ , $y = \sin 2x$ , $x = 0$ , $x = \pi/2$				
A) $\frac{1}{4}$	B) $\frac{1}{2}$	C) $\frac{1}{3}$	D) 2	E) 4
<b>3)</b> Find the volume of the solid obtained by rotating the region in the first quadrant bounded by $y = x^2$ and $y = 9$ about the $y$ -axis.				
A) $\frac{9}{2}\pi$	B) $\frac{81}{2}$	C) $\frac{81}{2}\pi$	D) $\frac{81}{4}\pi$	E) $9\pi$
<b>4)</b> Find the volume of the solid obtained by rotating the region bounded by $x = y^2$ and $x = 3y$ about the $y$ -axis.				
A) $\frac{-243}{3}\pi$	B) $\frac{1,458}{15}\pi$	C) $\frac{243}{15}\pi$	D) $\frac{256}{15}$	E) $\frac{-\pi}{15}$
<b>5)</b> Find the number(s) $a$ such that the average value of the function $f(x) = 80 - 34x + 3x^2$ on the interval $[0, a]$ is equal to 10.				
A) $a = 8$	B) $a = 10$	C) $a = 7$	D) $a = -7$	E) $a = -10$
<b>6)</b> Find the volume of the solid obtained by rotating the region bounded by the given curves about the specified axis. $y = 2x$ , $y = x^2$ ; $x$ - axis				
A) $\frac{64\pi}{15}$	B) $\frac{32\pi}{3}$	C) $\frac{14\pi}{15}$	D) $\frac{\pi}{15}$	E) $\frac{5\pi}{3}$
<b>7)</b> The height of a monument is 20 m. A horizontal cross-section at a distance $x$ meters from the top is an equilateral triangle with side $x/4$ meters. Find the volume of the monument.				
A) $25\frac{\sqrt{2}}{2}m^3$	B) $25\sqrt{3}m^3$	C) $125\frac{\sqrt{3}}{3}m^3$	D) $\frac{\sqrt{3}}{3}m^3$	E) $5\frac{\sqrt{2}}{3}m^3$
<b>8)</b> Find the average value of the function $z(t) = 4t \sin(t^2)$ on the interval $[0, \sqrt{\pi}]$				
A) $\frac{8}{\pi}$	B) $\frac{8}{\sqrt{\pi}}$	C) $\frac{4}{\pi}$	D) $\frac{4}{\sqrt{\pi}}$	E) none of these
<b>9)</b> Find the volume of the solid obtained by rotating the region bounded by the given curves about the specified line. $y = x$ , $y = \sqrt{x}$ ; about $x = 2$				

