Avon High School
AP Calculus AB

Name _____

Period _____ **Score** _____ / ~~10~~

Quiz 16 – Section 4.1

No Calculators should be used. Be sure to show all work.

1. Evaluate the integral $\int (2x^4 + 4x^3 - 2x)\, dx$.

a. $8x^3 + 12x^2 - 2 + C$ **b.** $2x^5 + 5x^4 - 5x^2 + C$ **c.** $\frac{2}{5}x^5 + x^4 - x^2$ **d.** $\frac{2}{5}x^5 + x^4 - x^2 + C$ **e.** none of these

2. Evaluate the integral $\int \frac{7 + \sqrt{x^3}}{\sqrt{x}}\, dx.$

a. $\frac{7}{2}\sqrt{x} + \frac{3}{2}x^2 + C$ **b.** $14\sqrt{x} + \frac{3}{2}x^2 + C$ **c.** $-\frac{7}{2}x^{-3/2} + 3 + C$ **d.** $\frac{7}{2}x^{-3/2} + \frac{3}{2}x^2 + C$ **e.** none of these

3. Evaluate the integral $\int \frac{\sec^3\theta \tan\theta}{1 + \tan^2\theta}\, d\theta$.

a. $\frac{1}{4}\sec^4\theta + C$ **b.** $\frac{1}{2}\sec^2\theta + C$ **c.** $\frac{1}{4}\sec^2\theta\tan^2\theta + C$ **d.** $\sec\theta + C$ **e.** none of these

4. Find $y = f(x)$ if $f''(x) = x + 2$, $f'(0) = 3$, $f(0) = -1$.

a. $y = \frac{1}{6}x^3 + x^2 + 3x - 1$ **b.** $y = \frac{x^3}{6} + 2x^2 + C$ **c.** $y = x^3 + 6x^2 + 18x - 6$

d. $y = \frac{1}{6}x^3 + x^2 + \frac{21}{2}x + \frac{61}{6} + C$ **e.** none of these

5. Use $a(t) = -32$ ft/sec^2 as the acceleration due to gravity. A ball is thrown vertically upward from the ground with an initial velocity of 64 feet per second. How high will the ball go?

a. 32 feet **b.** 64 feet **c.** 24 feet **d.** 144 feet **e.** none of these

4. Find $y = f(x)$ if $f''(x) = x + 2$, $f'(0) = 3$, $f(0) = -1$.

a. $y = x^3 + 6x^2 + 18x - 6$ **b.** $y = \frac{1}{6}x^3 + x^2 + \frac{21}{2}x + \frac{61}{6} + C$ **c.** $y = \frac{1}{6}x^3 + x^2 + 3x - 1$

d. $y = \frac{x^3}{6} + 2x^2 + C$ **e.** none of these

5. Use $a(t) = -32$ ft/sec^2 as the acceleration due to gravity. A ball is thrown vertically upward from the ground with an initial velocity of 96 feet per second. How high will the ball go?

a. 32 feet **b.** 64 feet **c.** 24 feet **d.** 144 feet **e.** none of these

Avon High School
AP Calculus AB

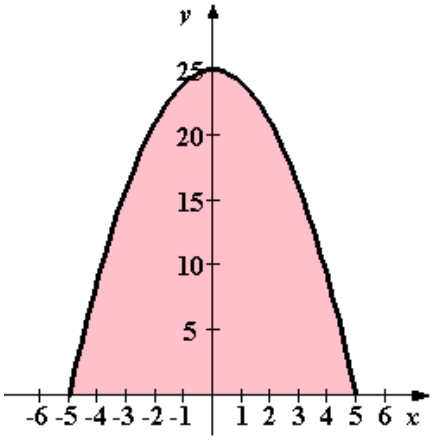
Name _____

~~**Period** _____~~ ~~**Score** _____ / 10~~

Quiz 18 – Section 4.3

Circle the correct answer. Each problem is worth 2 points. You may not use a graphing calculator.

1. The graph of the function $f(x) = 25 - x^2$ is shown to the right. Which of the following definite integrals yields the area of the shaded region?



a. $\int_0^5 (25 - x^2)\,dx$ **b.** $\int_{-25}^{25} (25 - x^2)\,dx$ **c.** $\int_0^{25} (25 - x^2)\,dx$

d. $2\int_0^5 (25 - x^2)\,dx$ **e.** $2\int_{-5}^5 (25 - x^2)\,dx$

2. Find the area depicted by the definite integral $\int_{-5}^{5} \left(5 - |x|\right)\,dx$.

a. 36 **b.** 25 **c.** 26.5 **d.** 22 **e.** 129.5

3. Find the area depicted by the definite integral $\int_{-3}^{3} \sqrt{9 - x^2}\,dx$.

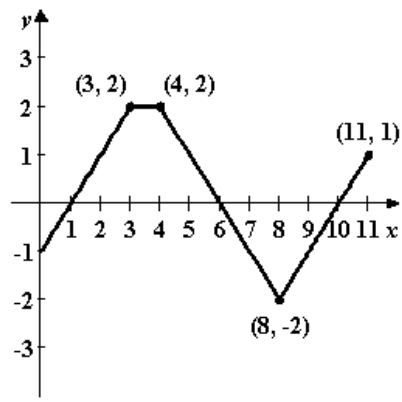
a. 9π **b.** $\frac{9\pi}{4}$ **c.** $\frac{9}{2}$ **d.** $\frac{9\pi}{2}$ **e.** $\frac{9}{8}\pi$

4. Given $\int_{2}^{3} x\,dx = \frac{5}{2}$. What is the value of $\int_{3}^{2} 12x\,dx$?

a. -12 **b.** -30 **c.** -76 **d.** 30 **e.** -195

5. The graph of f shown to the right consists of line segments.

Evaluate $\int_{0}^{8} f(x)\,dx$ using geometric formulas.

a. 4.5 **b.** 6.5 **c.** 3.5

d. 2.5 **e.** 5.5