Calculus I – Worksheet #24

For Problems 1~ 4, find the area between the curves:

1. $x = y^2 - 4 \quad x = 4 - 2y$

2. $x = y^2,\ y = 3x - 2$

2. $y = x^3 \quad y = x$

4. $y = x^2 - 1 \quad y = 3$

5.Approximate the area under $y = 3x^2 + 2$ on [0,4] using

A) 4 rectangles whose height is given using the left endpoint
B) 4 rectangles whose height is given using the right endpoint
C) 4 rectangles whose height is given using the midpoint
D) 4 trapezoids

6. A balloon is being filled with helium at the rate of $4ft^3$/min. The rate, in square feet per minute, at which the surface area is increasing when the volume is $\frac{32p}{3}\ ft^3$ is

A) $4p$ B)2 C) 4 D) 1 E) $2p$

7. If c is the number defined by Rolle's theorem, then, $f(x) = 2x^3 - 6x$ on $[0, \sqrt{3}]$, c is

A)1 B) -1 C) $\sqrt{2}$ D) 0 E) $\sqrt{3}$

8. The average value of cosx over the interval $\frac{p}{3} \le x \le \frac{p}{2}$ is

A) $\frac{3}{p}$ B) $\frac{1}{2}$ C) $\frac{3(2-\sqrt{3})}{p}$ D) $\frac{3}{2p}$ E) $\frac{2}{3p}$

9. Let: $f(x) = \frac{\sqrt{x+4} - 3}{x - 5}$ if $x \neq 5$ and let f be continuous at x = 5, Then c = ?
$f(5) = c$

A) $\frac{-1}{6}$ B) 0 C) $\frac{1}{6}$ D) 1 E) 6

10. Find the average value of $x^2 - 1$ on $[0, \sqrt{3}]$

11. Find the average value of $f(x) = \frac{-x^2}{2}$ on [0,3]

12. Find the average value of $f(x) = -3x^2 - 1$ on [0,1]