

MATH 170 – Section 010 – Quiz 10

You may work with other class members on this quiz, but you may *not* receive assistance from people not in MATH 170 (Section 010). You must show all of your work to receive full credit. Do all your work on other sheets of paper and be sure to staple all the pieces of paper together or **YOU WILL GET A 'ZERO' ON THE QUIZ**. Do not use decimal approximations unless asked to do so. Your work on this quiz must be handed in by Monday, 29 November 2004 at 1640. **GOOD LUCK!**

1) Find the most general antiderivative of each of the following functions:

a) $x^7 + \sqrt[3]{x} + \frac{1}{x^2}$

b) $\sin 3x$

c) e^{-x}

d) $\frac{x^3}{x^4 + 1}$

2) A person leans out of a building window and throws a ball upward at a speed of 32 ft/sec. The ball hits the ground 3.5 seconds later. How high above the ground was the ball thrown? Assume air resistance is negligible; thus the acceleration (due to gravity) of the ball is a constant 32 ft/sec².

3) Consider the area under the curve $y = x^3$ (and above the x -axis) from $x = 1$ to $x = 3$.

a) Estimate this area using four rectangles all of equal width where the height of each rectangle is determined using the right endpoint of each subinterval. Draw a picture that illustrates this.

b) Estimate this area using four rectangles all of equal width where the height of each rectangle is determined using the left endpoint of each subinterval. Draw a picture that illustrates this.

c) Based on your work above, what can you infer about the exact value of the area under the curve? Explain fully.