**MATH-1150 (DUPRÉ) FALL 2013 QUIZ 1 ANSWERS**

**DATE: WEDNESDAY 11 SEPTEMBER 2012**

**1. PRINT YOUR LAST NAME IN LARGE CAPITAL LETTERS ON THE UPPER RIGHT CORNER OF EACH SHEET TURNED IN.**

**2. PRINT YOUR FIRST NAME IN CAPITAL LETTERS DIRECTLY UNDERNEATH YOUR LAST NAME ON EACH SHEET TURNED IN.**

**3. WRITE YOUR CORRECT SECTION NUMBER DIRECTLY UNDER YOUR FIRST NAME.**

**CIRCLE THE VALUE OF THE INDICATED LIMITS.**

**4.** $\lim_{x\to 2}[x^3 - 5] =$

**[A]** 2
**[B]** 8
**[C]** 6
**[D]** 3
**[E]** NONE OF THE ABOVE

**ANSWER:** To find this limit we can simply replace $x$ with 2 and calculate

$$\lim_{x\to 2}[x^3 - 5] = 2^3 - 5 = 8 - 5 = 3,$$

so the correct choice for the answer is **[D]**.

**5.** $\lim_{x\to 3} \dfrac{x^2-9}{x-3} =$

**[A]** 2
**[B]** 8
**[C]** 6
**[D]** 3
**[E]** NONE OF THE ABOVE

**ANSWER:** We cannot find this limit by simply substituting 3 for $x$ as it results in putting zero in both the numerator and denominator, it is a limit of the form "zero over zero". However, we know that if putting a number into a polynomial gives the value zero, then $x$ minus that number is a factor, so the numerator factorizes as $x^2 - 9 = (x-3)(x+3)$, which can then give a cancellation of the denominator. We can then find the limit as

$$\lim_{x\to 3} \frac{x^2-9}{x-3} = \lim_{x\to 3} \frac{(x-3)(x+3)}{x-3} = \lim_{x\to 3} \frac{x+3}{1} = \lim_{x\to 3}(x+3) = 3+3 = 6,$$

so the correct choice for the answer is **[C]**.