

Handout 1: Some Corrections to “Lecture Notes for Transition to Calculus”

Math 112, Fall 2008

1. There is a slight mistake in the sign graph in the middle of page 63. In the row for $x + 2$, the 0 should be one slot farther to the left. It should be just above -2 and not above $-\frac{3}{2}$. The idea here is that $x(x - 2)(x + 2)$ is the product of three factors. Suppose all three of these factors are nonzero. Then the product of the three factors is negative if and only if an odd number of these factors are negative. The purpose of the sign chart is to determine the values of x for which this happens.
2. There is a slight error on page 70 in Appendix C. Near the bottom of the page, it says “Also the graph of a polynomial with even degree intersects the x -axis an even number of times.” Change the word “intersects” to “crosses.” For example, let $f(x) = x^2$. Then $f(x)$ is a polynomial of even degree. The graph of $f(x)$ *intersects* the x -axis once, but it never *crosses* the x -axis. It turns out that the statement in the appendix is true, provided that you make the correction as I have indicated.
3. The Rational Root Test appears at the bottom of page 70. The text states that the polynomial $p(x)$ has *real* coefficients. In fact, $p(x)$ must have *integer* coefficients.
4. In Example 1 on page 11, the textbook says the following:

$$p(x) = (x - 3)(x + 1)$$
$$q(x) = x(x - 2)(x + 2)$$

This is correct. However, there are two mistakes in the second paragraph of the example. The third sentence in the second paragraph should read as follows:

$$\text{As } x \rightarrow 0^-, p(x) \rightarrow -3 \text{ and } q(x) \rightarrow 0^+ \text{ so } r(x) \rightarrow -\infty.$$

The last sentence in the second paragraph of the example should read as follows:

$$\text{Finally as } x \rightarrow 2^-, r(x) \rightarrow \infty \text{ and as } x \rightarrow 2^+, r(x) \rightarrow -\infty.$$

5. In the middle of page 18, the textbook says the following: “The actual value of e is the value $(1 + h)^{1/h}$ approaches as h approaches ∞ .” Change “as h approaches ∞ ” to “as h approaches 0 through positive values.”
6. In the second line on page 34, change

$$\cos \pi/6 = \sin \pi/3 = 1/2, \quad \sin \pi/6 = \cos \pi/3 = \sqrt{3}/2$$

to

$$\cos(\pi/6) = \sin(\pi/3) = \sqrt{3}/2, \quad \sin(\pi/6) = \cos(\pi/3) = 1/2$$