# MATH 161 Solutions: QUIZ II

Compute each of the following limits or show why the limit fails to exist. Circle each answer. *Justify your reasoning.*

**Solution:**

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**Solution:** Since , we observe that is the dominant term of the numerator. Thus

Hence

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we choose the dominant term from every factor:

Hence

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we choose the dominant term from every factor.

**Solution:**

Thus, we are dealing with an indeterminate form of the type So, using algebra:

Now

**Solution:**  Using the limit law that states the limit of a sum equals the sum of the limits of the summands provided the limit of each summand exists, we obtain:

**Extra Credit** (**Nipissing University**, ON, Canada)

1. Evaluate the follosing limit, if it exists:

**Solution:**

Thus

1. Find the value *k* for which the following limit exists:

**Solution:**

First observe that

Now, if the limit has a value, then we must be looking at an indeterminate form. In other words, the numerator must also tend toward 0. So:

36 + 3k +7k – 6 = 30 + 10k

Thus k = -3.

*The limits of my language are the limits of my world.*

- Ludwig Josef Johann Wittgenstein, [**Tractatus Logico-Philosophicus**](http://en.wikipedia.org/wiki/Tractatus_Logico-Philosophicus)