**MATH 162 Practice QUIZ 4A**

1. For each of the following improper integrals, determine *convergence* or *divergence*. *Justify your answers!*

(a) 

(b) 

(c) 

(d) 

2. For each of the following sequences, determine *convergence* or *divergence*. In the case of convergence, find the *limit* of the sequence. *Briefly explain your reasoning!*

(a) 

(b) 

(c) 

(d) 

(e) 

3. Consider the following *recursively defined* sequence:

a1 = 4

a2 = 2

an = an-1an-2 – an-1 – an-2 + 1 for n ≥ 3.

Find the numerical values of a3, a4, a5 and a6. (Show your work.)

4. To which of the following series does the “*nth term test for divergence*” apply? Explain!















*Extra Credit:* For n ≥ 1, let



Determine convergence or divergence of the sequence {an}. (*Hint:* Do *not* try to evaluate the integral! Calculator solutions are not accepted.)

*There is more danger of numerical sequences continued indefinitely than of trees growing up to heaven. Each will some time reach its greatest height.*

- [Friedrich Ludwig Gottlob Frege](http://www.todayinsci.com/F/Frege_Friedrich/FregeFriedrich-Quotations.htm), **Grundgesetz der Arithmetik** (1893)