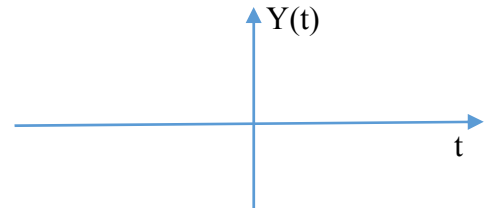


Your name: _____

Fall 2015 * Math 430 * Math 635
Prof. Victor Matveev
Quiz - not graded

1. What is the chemical composition of table salt?
2. The number of neurons in the human brain is about 10^N , where $N = \underline{\hspace{2cm}}$ (fill in)

3. Make a *rough* sketch of the following function curve: $Y(t) = \frac{1}{1+t^2}$



4. Differentiate: $Y(t) = \ln(t \ln t)$

5. Integrate: $\int \frac{t^3 dt}{1+t^4}$

6. Solve the following differential equation:

$$\begin{cases} \frac{d^2 Y}{dt^2} + 4Y(t) = 0 \\ Y(0) = 1; Y'(0) = 0 \end{cases}$$

7. Select all terms which are most relevant for describing energy production in a living cell:

- Mitochondria
- DNA
- ATP
- RNA
- Serotonin
- Dopamine
- Cytochrome oxidase

8. What does the following MATLAB program compute? (You don't have to know MATLAB to figure it out)

```
function F = someFunction(N)
F = 1;
for k = 2 : N
    F = k * F;
end;
```