

Quiz 0

MATH 241, CALCULUS IV, SUMMER 2017

Note: This is a knowledge check list and you do not need to turn it in. We will use these a lot in 241. If you are not familiar with them or forget something, you need catch up *as soon as possible*.

- **Arithmetic:** basic transcendental functions, Eulers formula
- **Solving standard ordinary differential equations:**

$$\frac{du}{dt} = cu \tag{1}$$

and

$$a\frac{d^2u}{dt^2} + b\frac{du}{dt} + cu = 0 \tag{2}$$

where a, b, c are constants.

- Separation of variables for

$$\frac{du}{dt} = f(x)g(u), \tag{3}$$

,

- First order linear equation:

$$\frac{du}{dt} + a(x)u = f(x) \tag{4}$$

- **Calculus in several variables:** partial and directional derivatives, gradients, the Laplacian
- **Vector calculus:** curl, divergence, line integrals, surface integrals, Divergence theorem Stokes' theorem