

## MATH 3401 Revision.

- \* review assignments
- \* review mid-semester
- \* old exams.

### Additional questions:

- ① find all  $z \in \mathbb{C}$  s.t.  $\cos z = 1$
- ② find all  $z \in \mathbb{C}$  s.t.  $\cosh z = i$
- ③ Find the singularities of the following functions, and classify them if they are isolated:  
a)  $\frac{z}{(z^2+4)^2}$ ; b)  $\sec(\frac{1}{z})$ ; c)  $\frac{\sin z^3}{z^3}$ ; d)  $z^3 e^{1/z}$
- ④ Show  $\int_{-\infty}^{\infty} \frac{x^2 dx}{(x^2+1)^2(x^2+2x+2)} = \frac{7\pi}{50}$
- ⑤ Show  $\int_0^{\infty} \frac{dx}{x^6+1} = \frac{\pi}{3}$