

**WORKSHEET 4/10/23**  
**MATH 2331, SPRING 2023**

- (1) Suppose that  $A$  is diagonalizable. What can you say about  $A^r$  (the  $r$ th power of  $A$ )?
- (2) The following discrete dynamical system is a simple model of glucose and insulin levels in the body:

$$\begin{aligned}g(t+1) &= 0.9g(t) - 0.4h(t) \\h(t+1) &= 0.1g(t) + 0.9h(t).\end{aligned}$$

Why does the model make sense?

- (3) What happens when we apply our general approach to discrete dynamical systems in this example?
- (4) Let  $z = 3 + 4i$ . Plot  $z$  and  $iz$  in the complex plane  $\mathbb{C}$ . What do you notice?