The domain is all values that w is allowed to be.
Since I can't divide by zero (division by zero isn't allowed,

The domain will then be all other w-values. When is this denominator equal to zero?

I need to find all values of w that would cause division by zero.

 $4 w^4 + 16 = 0$ 

impossible , then the domain of h is  $(-\infty,\infty)$  i.e.  $w \in \mathbb{R}$