

1. Find the solution set for the equation  $\frac{107}{1+\exp(x)} = 0$ .
2. Inflation is causing the cost of chicken eggs to increase. The cost (in dollars) of a dozen chicken eggs is  $C = 1.83 \times 1.052^T$ , where  $T$  is the number of years after 1 January, 2022. When will chicken eggs cost \$2.00 per dozen?
3. Find the inverse of the function  $W(x) = 5x + 1$  and  $\text{dom}(W) = \mathbf{R}$ .

4. Define  $Z(t) = t - 2t^2$ . Find

(a)  $\text{ARC}_{[1,1.1]}(Z) =$

(b)  $\text{ARC}_{[1,1.01]}(Z) =$

(c)  $\text{ARC}_{[1,1.001]}(Z) =$

(d) a simplified formula for  $\text{ARC}_{[1,b]}(Z) =$