

**ALGEBRA 2 HONORS**  
**PROBLEM SET 6**

DUE DATE: FEBRUARY 29, 2024

**Question 1.** If  $\frac{5^7}{5^{-3}} = 5^a$  and  $\frac{2^{-3}}{2^{-2}} = 2^b$  and  $3^7 \cdot 3^{-1} = 3^c$  then what is the value of  $a + b + c$ ?

**Question 2.** Solve for  $x$  in the equations:

(a)  $2^{x-1} = \frac{1}{8}$

(b)  $4^{2x-1} = \frac{1}{2}$

(c)  $8^{1-x} = \frac{1}{4}$

(d)  $3 \cdot 2^x = 24$

(e)  $2^x \cdot 8^{1-x} = \frac{1}{4}$

**Question 3.** Without a calculator, compute  $125^{-2/3}$  and  $32^{2/5}$ .

**Question 4.** Identify which of the exponential graphs are *growth* and which are *decay*.

