NAME:

# Test 19 (Lessons 37–38): Exponential Functions, Equations, and Inequalities

**For problems 1–2, use the equations:** $f(x) = 2(0.3)^{x-1} + 5$ **and** $g(x) = -2(0.3)^{x+5} - 3$

**1)** Describe the transformation from $f(x)$ to $g(x)$.

**2)** Explain whether $f(x)$ and $g(x)$ represent growth or decay. Name the domain and range.

**3)** Write the exponential equation in the form $y = ab^x$ using the points $(-4, 48)$ and $(2, 0.75)$.

**Solve.**

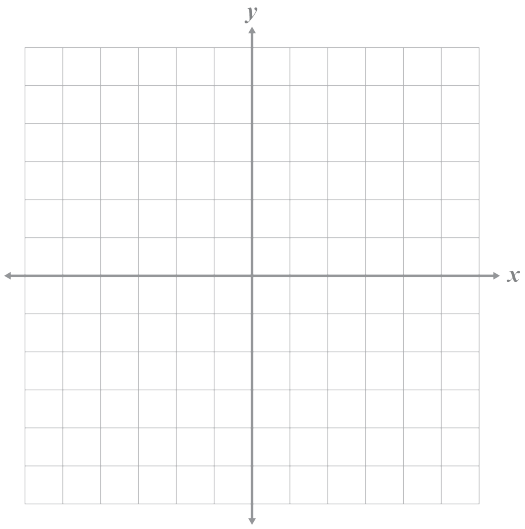
**4)** $8^{9-4x} > 4^{9x+3}$

**5)** $729^{2x-3} = \left(\frac{1}{27}\right)^{x-9}$

**For problems 6–7, use the exponential equation:** $y = 4^x$

**6)** Name $b$ and explain if it represents the growth or decay factor.

**7)** Graph.



**Solve.**

**8)** $6^x \leq 36^{x-3}$

**9)** $25^{x-3} = 125^{\frac{1}{2}x-1}$

**10)** $\left(\frac{8}{125}\right)^{2x} = \left(\frac{25}{4}\right)^{1-5x}$