## 9-1 Skills Practice
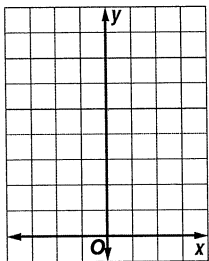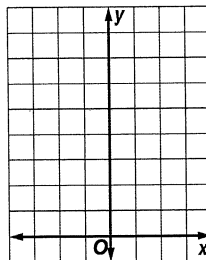
### Exponential Functions

**Sketch the graph of each function. Then state the function's domain and range.**

**1.** $y = 3(2)^x$



**2.** $y = 2\left(\dfrac{1}{2}\right)^x$



**Determine whether each function represents exponential *growth* or *decay*.**

**3.** $y = 3(6)^x$

**4.** $y = 2\left(\dfrac{9}{10}\right)^x$

**5.** $y = 10^{-x}$

**6.** $y = 2(2.5)^x$

**Write an exponential function whose graph passes through the given points.**

**7.** $(0, 1)$ and $(-1, 3)$

**8.** $(0, 4)$ and $(1, 12)$

**9.** $(0, 3)$ and $(-1, 6)$

**10.** $(0, 5)$ and $(1, 15)$

**11.** $(0, 0.1)$ and $(1, 0.5)$

**12.** $(0, 0.2)$ and $(1, 1.6)$

**Simplify each expression.**

**13.** $\left(3^{\sqrt{3}}\right)^{\sqrt{3}}$

**14.** $\left(x^{\sqrt{2}}\right)^{\sqrt{7}}$

**15.** $5^{2\sqrt{3}} \cdot 5^{4\sqrt{3}}$

**16.** $x^{3\pi} \div x^{\pi}$

**Solve each equation or inequality. Check your solution.**

**17.** $3^x > 9$

**18.** $2^{2x + 3} = 32$

**19.** $49^x \le \dfrac{1}{7}$

**20.** $4^{3x - 2} = 16$

**21.** $3^{2x + 5} = 27^x$

**22.** $27^x = 3^{2x + 3}$