$$\left(\frac{1}{2}\right)^x \cdot n = 1$$
$$2^x \left(\frac{1}{2}\right)^x \cdot n = 2^x$$
$$n = 2^x$$
$$2^k = 2^x$$
$$k = x$$
$$\log_2 n = x$$

$$a^n = \begin{cases} a & \text{if } n = 1 \quad \text{(Base Case)} \\ \left(a^{\frac{n}{2}}\right)^2 & \text{if } n > 1 \text{ and even} \quad \text{(Recursive Case)} \\ a \cdot \left(a^{\frac{n-1}{2}}\right)^2 & \text{if } n > 1 \text{ and odd} \quad \text{(Recursive Case)} \end{cases}$$

$$F_n = \frac{\left(\frac{1+\sqrt{5}}{2}\right)^{n+1} - \left(\frac{1-\sqrt{5}}{2}\right)^{n+1}}{\sqrt{5}}$$