Solve each equation. Round to the nearest hundredth.

1. $7^x = 500$

2. $10^x = 32$

3. $4^x = 0.75$

4. $2 \cdot 5^{x-3} + 8 = 20$

5. $5\log_x 8 = 13$

6. The population of a city in 2003 was 500,000 and decreases 3.5% each year. In how many years will the population reach 100,000? Round to the nearest hundredth.