

45 (a) We must solve the equation $f(x) = 20,000$.

$$2329(1.2406)^{(x-1988)} = 20,000 \Rightarrow (1.2406)^{(x-1988)} = \frac{20,000}{2329} \Rightarrow \ln(1.2406)^{(x-1988)} =$$

$$\ln \frac{20,000}{2329} \Rightarrow x - 1988 = \frac{\ln(20,000/2329)}{\ln(1.2406)} \approx 10. \quad \text{In } 1988 + 10 = 1998, \text{ this number could be}$$

approximately 20,000 individuals.

(b) To support this numerically table $Y_1 = 2329(1.2406)^{(X-1988)}$ starting at $x = 1987$, incrementing by 1. From *Figure 45* we can see that in 1998 there may have been 20,000 people waiting for liver transplants.

X	Y ₁	
1995	10534	
1996	13068	
1997	16213	
1998	20113	
1999	24953	
2000	30956	
2001	38405	

X=1998

Figure 45