20. Suppose the month is February. Your payment on the 28th day would be $2^{28-1}=2^{27}=134 , 217 , 728$ cents, or $1 , 342 , 177 . 28$. Clearly, the second method of payment results in a larger amount for any month.

10. The graph of $f(x)=1+4x-x^2$ is a parabola with axis of symmetry $x=-\dfrac{b}{2a}=-\dfrac{4}{2(-1)}=2$. Pick any x –values equidistant from 2 to find two equal function values. For example, $f(1)=4$ and $f(3)=4$, so f is not $1-1$.

22. $m=\dfrac{m_0}{\sqrt{1-v^2/c^2}} \Rightarrow 1-\dfrac{v^2}{c^2}=\dfrac{m_0^2}{m^2} \Rightarrow \dfrac{v^2}{c^2}=1-\dfrac{m_0^2}{m^2} \Rightarrow v^2=c^2\left(1-\dfrac{m_0^2}{m^2}\right) \Rightarrow v=c\sqrt{1-\dfrac{m_0^2}{m^2}}$. This formula gives us the speed v of the particle in terms of its mass m , that is, $v=f^{-1}(m)$.

26.

$$\lim_{x\to 0}\dfrac{x-1}{x^2(x+2)}=-\infty \text{ since } x^2\to 0 \text{ as } x\to 0 \text{ and } \dfrac{x-1}{x^2(x+2)}<0 \text{ for } 0<x<1 \text{ and for } -2<x<0 .$$