3

Z:

$x = s\, m\, 2^c$, $s = \operatorname{sgn} x$, $c \in \mathbb{Z}$, $m \in [\tfrac{1}{2}, 1)$

$rd(x) = s\, m_t^r\, 2^c$ $\qquad\qquad m_t^r \in [\tfrac{1}{2}, 1)$

$|m - m_t^r| \le \tfrac{1}{2} 2^{-t}$

T: $\dfrac{|rd(x) - x|}{|x|} \le 2^{-t}$

$m, m_t^r, 2^c > 0$

$L = \dfrac{|s\, m_t^r\, 2^c - s\, m\, 2^c|}{|s\, m\, 2^c|} = \dfrac{2^c}{2^c}\,\dfrac{|m_t^r - m|}{m} \le \tfrac{1}{2} 2^{-t} \cdot \tfrac{1}{m} \le$

$\left(m \in [\tfrac{1}{2}, 1) \Rightarrow \tfrac{1}{m} \in (1, 2] \quad \Rightarrow \tfrac{1}{m} \le 2 \right)$

$\le \tfrac{1}{2} 2^{-t} \cdot 2 = 2^{-t}$