QUANTIFIERS

(1) f is increasing
(2) f is bounded
(3) f is unbounded
(4) f is constant
(5) f is not constant
(6) f achieves a maximum value at some point.
(7) f achieves a local maximum value at some point.

(a) $\exists a \in \mathbb{R}$, $\forall x \in \mathbb{R}$, $f(x) = c$
(b) $\exists a \in \mathbb{R}$, $\forall x \in \mathbb{R}$, $f(x) < a$
(c) $\forall x \in \mathbb{R}$, $\exists y \in \mathbb{R}$, $f(x) > f(y)$
(d) $\exists x \in \mathbb{R}$, $\exists a \in \mathbb{R}$, $\forall y \in \mathbb{R}$, $|x - y| < a$, then $f(x) < f(y)$
(e) $\forall a \in \mathbb{R}$, $\exists x \in \mathbb{R}$, $f(x) > a$
(f) $\exists x \in \mathbb{R}$, $f(x) \neq f(0)$
(g) $\exists x \in \mathbb{R}$, $\forall y \in \mathbb{R}$, $f(y) < f(x)$
(h) $\forall x \in \mathbb{R}$, $\forall y \in \mathbb{R}$, if $x < y$, then $f(x) < f(y)$