

Transformations $y = f(x) + K$ _____ shift

$K > 0$ up

$K < 0$ down

$y = f(x + h)$ _____ shift

$h > 0$ left

$h < 0$ right

$y = -f(x)$ reflection about _____ axis

$y = f(-x)$ reflection about _____ axis

$y = af(x)$ vertical stretch or shrink

$a > 1$ stretch

$0 < a < 1$ shrink

$y = f(bx)$ horizontal stretch or shrink

$0 < a < 1$ stretch

$a > 1$ shrink

Asymptotes

If as $x \rightarrow \infty$ or as $x \rightarrow -\infty$ and

$f(x) \rightarrow L$ then the line $y = L$ is a _____ asymptote.