

Transformations:

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|--------------------------------|--|
| a) $f(x) + 2$ up 2 | g) $3f(x)$ vertical stretch of 3 |
| b) $f(x) - 5$ down 5 | h) $\frac{1}{2}f(x)$ vertical shrink of $\frac{1}{2}$ |
| c) $f(x+3)$ left 3 | i) $f(4x)$ horizontal shrink of $\frac{1}{4}$ |
| d) $f(x-1)$ right 1 | j) $f(\frac{3}{4}x)$ horizontal stretch of $\frac{4}{3}$ |
| e) $-f(x)$ reflect over x-axis | k) $ f(x) $ all y-values are positive |
| f) $f(-x)$ reflect over y-axis | l) $f(x)$ all pos x-values reflected over y-axis |

- I. For each function determine the following
- Domain
 - Range
 - Is it one to one?
 - Is it continuous? If not, what type of discontinuity does it have?

- II. Sketch the following for each function

- $f(-x)$
- $-f(x)$
- $-f(x+2)$
- $f(x-1)+2$
- $f(|x|)$
- $|f(x)|$
- $f^{-1}(x)$
- $2f(x)-1$
- $f(2x)$

