

Transformations of Functions

Math 220 Spring '09

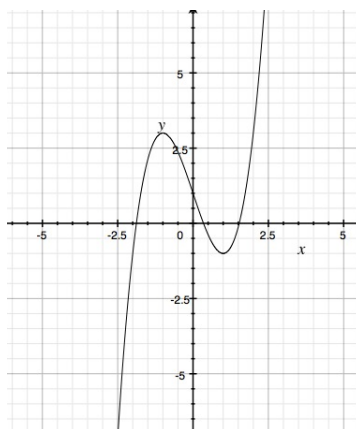


Figure 1: The graph of the function $f(x) = x^3 - 3x + 1$.

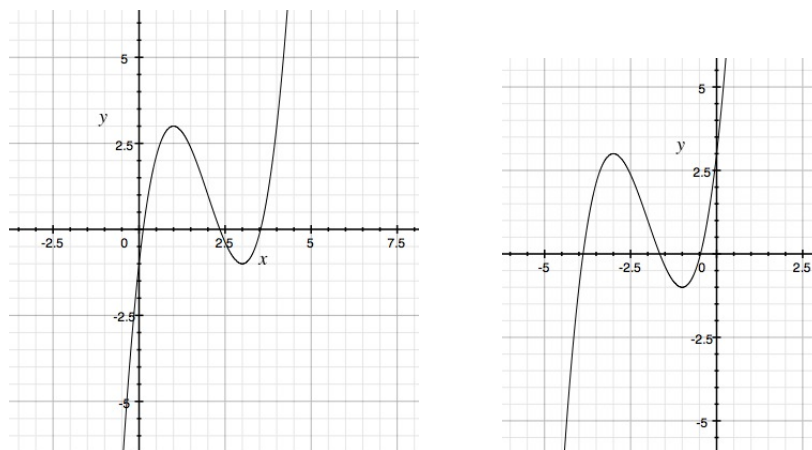


Figure 2: $f(x - 2)$ on the left and $f(x + 2)$ on the right.

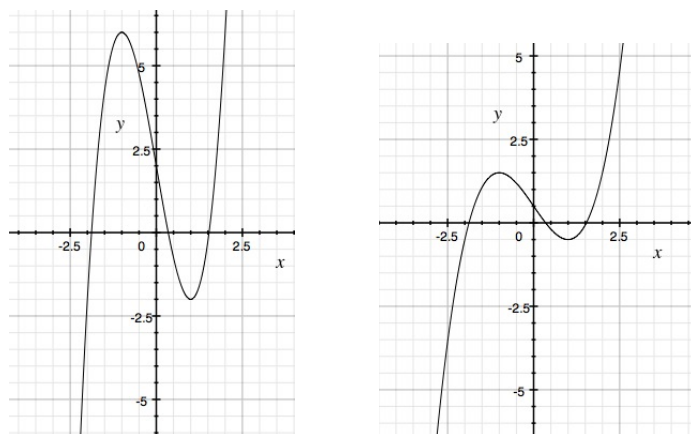


Figure 3: $2f(x)$ on the left and $\frac{1}{2}f(x)$ on the right.

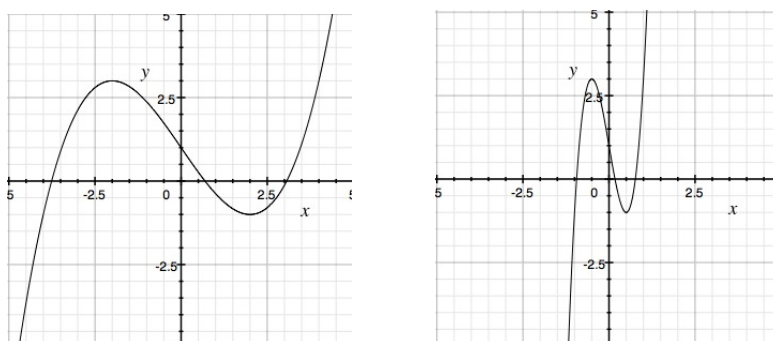


Figure 4: $f(\frac{x}{2})$ on the left and $f(2x)$ on the right.

Notice that $f(cx)$ “squishes” the graph when $c > 1$ and stretches the graph when $0 < c < 1$. If $c < 0$, we take the graph of $f(|c|x)$ and reflect it across the y -axis.

Similarly for $c < 0$ to graph $cf(x)$, we take the graph of $|c|f(x)$ and reflect it across the x -axis.

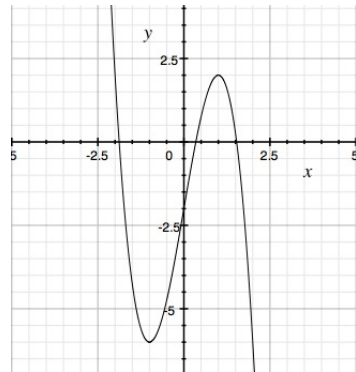
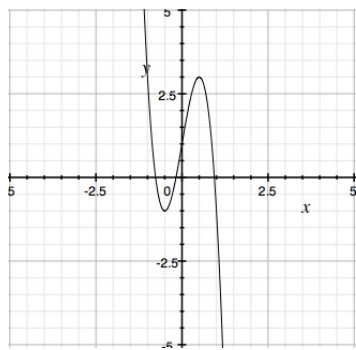


Figure 5: $f(-2x)$ on the left and $f(2x)$ on the right.