Exercise 20

For the following exercises, find the domain, range, and all zeros/intercepts, if any, of the functions.

$$f(x) = 4|x + 5|$$

Solution

Any value of x can be plugged into this function, so the domain is $\{x \mid -\infty < x < \infty\}$. The smallest value of $f(x)$ happens when $x = -5$, $f(-5) = 0$, and as x gets higher and higher, $f(x)$ gets higher and higher too. The range is then $\{y \mid 0 \leq y < \infty\}$. $x = -5$ is zero, so the one x-intercept is $(-5, 0)$. Below is a graph of $f(x)$ versus x to confirm these results.