

#2

$$f(x) = 2(x+5)$$

domain: \mathbb{R} or $(-\infty, \infty)$

#8

$$g(x) = \frac{2}{x^2 + x - 12}$$

! denominator $\neq 0$, so let's find zeros of $x^2 + x - 12$:

$$x^2 + x - 12 = 0 \quad -12 : -3, 4$$

$$(x-3)(x+4) = 0$$

$$x-3 = 0 \quad \text{or} \quad x+4 = 0$$

$$x = 3 \quad \text{or} \quad x = -4 \quad \leftarrow \text{exclude from the domain.}$$

domain: $\{x \mid x \neq -4 \text{ and } x \neq 3\}$ \leftarrow set-builder notation

$(-\infty, -4) \cup (-4, 3) \cup (3, \infty)$ \leftarrow interval notation.

#20

$$g(x) = \frac{1}{\sqrt{x+2}}$$

1) exclude zeros: $x+2 = 0 \quad x = -2$

2) $x+2 \geq 0 \quad \leftarrow$ the radicand must be non-negative

$$x \geq -2$$

domain: $\{x \mid x \geq -2\}$

~~or~~ or $(-2, \infty)$