Circle True or False. (1 point each)

1. True   **FALSE** There is a unique choice of a domain for any function f.

2. True   **FALSE** To graph $f(2x+1)$, take the graph of $f(x)$, compress it along the x axis
   by a factor of 2, and then shift it to the left by 1.

Show your work and justify your answers.

3. (10 points) Find the domain of each of the following functions. (2 points each)

   (a) $f(x) = \dfrac{x+5}{2x-4}$.

   > **Solution:** $(-\infty, 2) \cup (2, \infty)$ or $\{x : x \neq 2\}$ or $\mathbb{R}\backslash\{2\}$.

   (b) $g(x) = x^2 + 2x + 1$.

   > **Solution:** $(-\infty, \infty)$ or $\mathbb{R}$.

   (c) $f + g$.

   > **Solution:** $(-\infty, 2) \cup (2, \infty)$ or $\{x : x \neq 2\}$ or $\mathbb{R}\backslash\{2\}$.

   (d) fg.

   > **Solution:** $(-\infty, 2) \cup (2, \infty)$ or $\{x : x \neq 2\}$ or $\mathbb{R}\backslash\{2\}$.

   (e) f/g.

   > **Solution:** $\{x : x \neq -1, x \neq 2\}$ or $\mathbb{R}\backslash\{-1, 2\}$.