

Domain given equations + not graphs.

* x values that "work". If you plug in the x, you get a y.

Ex. $f(x) = 3x - 8$
domain $(-\infty, \infty)$ You can plug in anything for x

Ex. $f(x) = 3x^2 - 2x + 7$
 $(-\infty, \infty)$

Ex. $f(x) = \frac{3}{x}$
 $x \neq 0$
Can't divide by 0!!
Problem!
Set denom = 0 + solve. Those are values to exclude.

Domain: $(-\infty, 0) \cup (0, \infty)$
↑ Break at value excluded.

Ex. $f(x) = \frac{5x}{x-7}$ ← ignore
← $x-7 \neq 0$ domain: $(-\infty, 7) \cup (7, \infty)$
 $x \neq 7$

Ex. $f(x) = \frac{3x-8}{x^2-5x+6}$ → $x^2 - 5x + 6 = 0$
 $(x-2)(x-3) = 0$
 $x-2=0$ $x-3=0$
 $x \neq 2$ $x \neq 3$
 $(-\infty, 2) \cup (2, 3) \cup (3, \infty)$

$$\text{Ex. } f(x) = \frac{5x+10}{x^2-9} \rightarrow$$

$$x^2-9=0 \rightarrow$$

$$\sqrt{x^2} = \sqrt{9}$$

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

$$x = \pm \sqrt{9}$$

$$x \neq 3 \quad x \neq -3$$

$$x = \pm 3$$

$$\boxed{(-\infty, -3) \cup (-3, 3) \cup (3, \infty)}$$