

Domain of Function B

Determine the domain for each of the following.

1. $f(x) = -5x + 4$
 $(-\infty, \infty)$

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

3. $f(x) = \frac{x}{x^2 + 1}$ $x^2 + 1 \geq 0 \checkmark$
 $(-\infty, \infty)$

4. $f(x) = \frac{x^2}{x^2 + 1}$ $x^2 + 1 \geq 0 \checkmark$
 $(-\infty, \infty)$

5. $f(x) = \frac{x}{x^2 - 16} = (x+4)(x-4) \neq 0$
 $x \neq \pm 4$
 $(-\infty, -4) \cup (-4, 4) \cup (4, \infty)$

6. $f(x) = \frac{2x}{x^2 - 4}$ $(x+2)(x-2) \neq 0$
 $(-\infty, -2) \cup (-2, 2) \cup (2, \infty)$ $x \neq \pm 2$

7. $f(x) = \frac{x-2}{x^3 + x}$ $x(x^2 + 1) \neq 0$
 $(-\infty, 0) \cup (0, \infty)$ $x \neq 0$ Remember $x^2 + 1 > 0 \checkmark$

8. $f(x) = \frac{x+4}{x^3 - 4x}$ $x^3 - 4x \neq 0$
 $x(x^2 - 4) \neq 0$
 $x(x-2)(x+2) \neq 0$
 $x \neq 0, \pm 2$

9. $f(x) = \sqrt{3x-12}$ $3x-12 \geq 0$
 $3x \geq 12$

$x \geq 4$
 or $[4, \infty)$

10. $f(x) = \sqrt{1-x}$

$1-x \geq 0$

$-x \geq -1$

$x \leq 1$

or $(-\infty, 1]$

11. $f(x) = \frac{4}{\sqrt{x-9}}$

$x-9 > 0$

$x > 9$

or $(9, \infty)$

12. $f(x) = \frac{x}{\sqrt{x-4}}$

$x-4 > 0$

$x > 4$

or $(4, \infty)$

13. $f(x) = \sqrt{-x-2}$

$-x-2 \geq 0$

$-x \geq 2$

$x \leq -2$

14. $f(x) = \sqrt{\frac{2}{x-1}}$

$x-1 > 0$ or $x > 1$

$\frac{2}{x-1} \geq 0$

or $x > 1$
 $(1, \infty)$

$(-\infty, -2]$

15. $f(x) = \frac{\sqrt{3x+1}}{2x^2 - 5x - 12}$

$3x+1 \geq 0$

$3x \geq -1$

$(2x+3)(x-4) \neq 0$

$x \geq -\frac{1}{3}$

$x \neq -\frac{3}{2}, 4$

$[-\frac{1}{3}, 4) \cup (4, \infty)$

16. $f(x) = \frac{\sqrt{3-2x}}{x^2 + 5x + 6}$

$3-2x \geq 0$

$-2x \geq -3$

$(x+2)(x+3) \neq 0$

$x \neq -3, -2$

$x \leq \frac{3}{2}$

or $(-\infty, -3) \cup (-3, -2) \cup (-2, \frac{3}{2}]$