

Rational Expressions and Equations

- 1 Add or subtract the rational expressions, grouping like terms in the numerator.

$$\frac{8}{x+4} + \frac{9}{x-1}$$

A $\frac{17x+28}{(x+4)(x-1)}$

B $\frac{17}{(x+4)(x-1)}$

C $\frac{-x-44}{(x+4)(x-1)}$

D $\frac{8+9}{x+4+x-1}$

- 2 Add or subtract the rational expressions, grouping like terms in the numerator.

$$\frac{4}{x^2-7x+12} - \frac{2}{x+2}$$

A $\frac{-2x^2+18x-16}{(x-3)(x-4)(x+2)}$

B $\frac{2x^2-10x+32}{(x-3)(x-4)(x+2)}$

C $\frac{4-2}{x^2-7x+12-x+2}$

D $\frac{2}{(x-3)(x-4)(x+2)}$

- 3 One of these potential solutions is extraneous. Select the extraneous solution.

A $x = 3$

B $x = 5$

- 4 Find the value of m without using a calculator

$$\frac{4m^2+8m+4}{m+1} = 72$$

A $m = 17$

B $m = 7$

C $m = 18$

D $m = 8$

E $m = 26$

F $m = 20$

- 5 Find the value of t without using a calculator

$$\frac{t^2+2t+1}{t+1} = 10$$

A $t = 16$

B $t = 9$

C $t = 14$

D $t = 18$

E $t = 15$

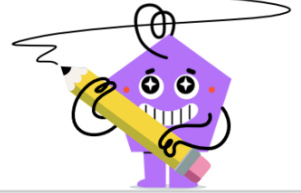
F $t = 1$

- 6 What set describes the domain of this function?

$$f(x) = \frac{-1x-4}{3x^2-9x+6}$$

A $\{X \in \mathbb{R} | X < 1 \text{ or } 1 < X < 2 \text{ or } -2 < X < 2\}$

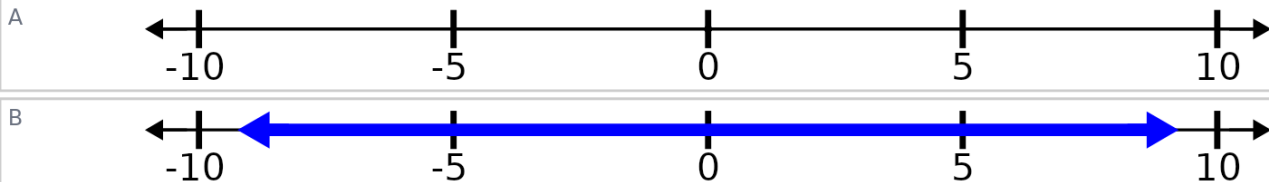
B $\{X \in \mathbb{R} | X < 1 \text{ or } 1 < X < 2 \text{ or } 2 < X\}$



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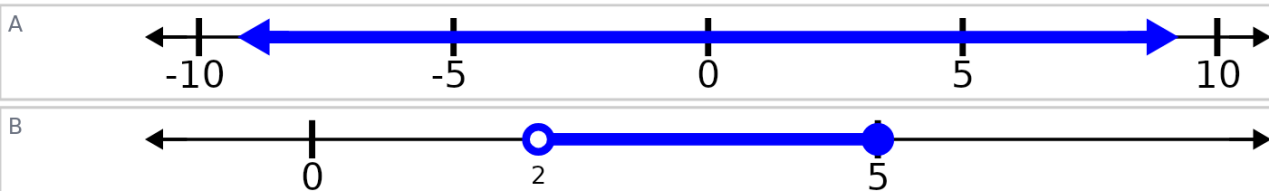
7 What number line shows the domain of this function?

$$f(x) = \frac{5}{1x^2 - 3x + 21}$$



8 What number line shows the domain of this function?

$$f(x) = \frac{-1x + 2}{-5x^2 - 8x - 20}$$



9 What set describes the domain of this function?

$$f(x) = \frac{3}{1x^2 - 4x - 21}$$

- A $\{X \in \mathbb{R} | X < -3 \text{ or } -3 < X < 7 \text{ or } 7 < X\}$
- B $\{X \in \mathbb{R} | -3 < X < 3 \text{ or } -3 < X \leq 7 \text{ or } -7 < X < 7\}$

10 What set describes the domain of this function?

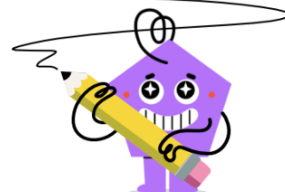
$$f(x) = \frac{-1x - 5}{3x^2 - 7x + 10}$$

- A $\{X \in \mathbb{R} | \}$
- B $\{X \in \mathbb{R} | 1 \leq X\}$

11 What does this expression simplify to?

$$\frac{p^2 + 2p + 1}{p + 1}$$

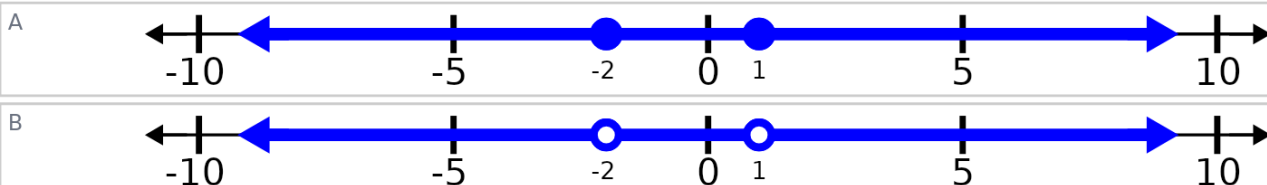
- A $(p + 1)^2$
- B $(p + 1)$
- C $(p - 1)$



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12 What number line shows the domain of this function?

$$f(x) = \frac{1x + 2}{4x^2 + 4x - 8}$$



13 Which set of values satisfies this inequality?

$$\frac{x^2 + 6x + 8}{x - 1} > 0$$

- A $(-\infty, -4) \cup (-3, -2) \cup (1, \infty)$
- B $(-4, -2) \cup (1, \infty)$
- C $(-\infty, -4) \cup (-4, -2) \cup (-2, 1) \cup (1, \infty)$
- D $(-\infty, -4) \cup (-2, 1)$

14 On which set of open intervals does this rational function keep a constant sign?

$$\frac{(x + 3)(x - 3)}{x + 3}$$

- A $(-\infty, -4) \cup (-4, 3) \cup (3, \infty)$
- B $(-\infty, -3) \cup (-3, 3) \cup (3, \infty)$
- C $(-\infty, 3) \cup (3, \infty)$
- D $(-\infty, -2) \cup (-2, 3) \cup (3, \infty)$

15 What is the value of this equation when $d=8$, $m=7$, $z=5$

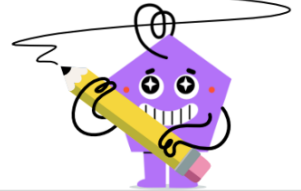
$$\frac{5d^2}{5m^2 + 3z^2}$$

- | | |
|-------|-------------|
| A 355 | B $1d$ |
| C 1 | D -565 |
| E 4 | F $d^5 + 1$ |

16 What is the value of this equation when $m=6$, $x=-8$, $b=-6$

$$\frac{7m^2}{3x^2 - 3b^2}$$

- | | |
|----------|--------|
| A -444 | B 3 |
| C -5 | D -4 |
| E 444 | F $3m$ |



Rational Expressions and Equations

- 17** What does this equation become when $m=4$, $b=2$?

$$\frac{7m}{7b}$$

A $\frac{7+4}{7+2}$

B $\frac{7 \cdot 4}{7 \cdot 2}$

- 18** What does this expression simplify to?

$$\frac{c^2 - 81}{c - 9}$$

A $(c - 9)$

B $(c + 9)$

- 19** Solve for the variable in the equation

$$\frac{45}{4c - 7} = 5$$

A $c = 3$

B $c = 4$

C $c = 2$

D $c = 6$

E $c = 7$

F $c = 5$

- 20** What number can be put in the circle to make this equation correct?

$$\frac{98}{2 \cdot \bigcirc + 6} = 7$$

A $\bigcirc = 4$

B $\bigcirc = 7$

C $\bigcirc = 5$

D $\bigcirc = 3$

E $\bigcirc = 2$

F $\bigcirc = 6$

- 21** Find the value of p without using a calculator

$$\frac{p^2 - 36}{p + 6} = 3$$

A $p = 18$

B $p = 16$

C $p = 9$

D $p = 8$

E $p = 12$

F $p = 17$