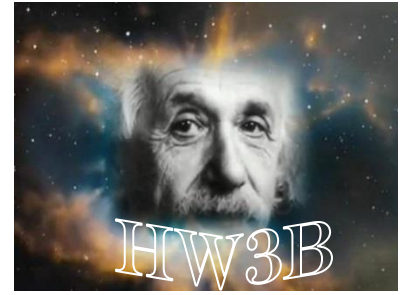


Name the restrictions (or undefined values) for each rational inequality.

$$1) \frac{x^2 + 1}{x^2 - 1} \geq 0$$

$$2) 0 > \frac{n}{4n^2 + 18n}$$

$$3) \frac{3m - 1}{4m^2 + 1} \leq 0$$



Solve each inequality using sign analysis.

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

$$5) (x - 4)(x - 2)^2(x - 3)^2 < 0$$

$$6) x^2 - 2x - 15 \leq 0$$

$$7) 2x^2 - x - 3 \geq 0$$

$$8) x^4 - 3x^2 > 10$$

$$9) a^3 + 2a^2 - 4a - 8 > 0$$

$$10) 2w^2 + 5w - 7 \leq 0$$

$$11) n^3 - 7n + 6 < 0$$

$$12) 4x^4 - 4x^3 - 3x^2 + 4x > 1$$

Solve each rational inequality using sign analysis. Don't forget to include the restrictions (undefined values) as part of your number line.

$$13) \frac{(x - 3)(x - 4)}{(x - 5)(x - 6)^2} < 0$$

$$14) \frac{(x + 1)(x - 3)^2}{(x - 5)^2} > 0$$

$$15) \frac{(2x - 5)^3}{x^2 - 3x - 28} \geq 0$$

$$16) \frac{(3n - 12)^2}{3n^2 - 12} \leq 0$$

$$17) \frac{2x^2 + 7x + 8}{x^2 + 1} > 0$$

$$18) \frac{n^2 + 4n + 4}{n^2 + 4n} > 0$$

1)  $x \neq \pm 1$

2)  $n \neq 0, -9/2$

3) no undefined values

4)  $x < -4$  or  $x > 3$

5)  $x < 4, x \neq 2, 3$

6)  $-3 \leq x \leq 5$

7)  $x \leq -1$  or  $x \geq 3/2$

8)  $x < -\sqrt{5}$  or  $x > \sqrt{5}$

9)  $a > 2$

10)  $-7/2 \leq x \leq 1$

11)  $n < -3$  or  $1 < n < 2$

12)  $x < -1$  or  $x > 1$

13)  $x < 3$  or  $4 < x < 5$

14)  $x > -1, x \neq 3, 5$

15)  $-4 < x \leq 5/2$  or  $x > 7$

16)  $-2 < n < 2$  or  $n = 4$

17) all real numbers

18)  $n < -4$  or  $n > 0$