Name
Date
Course

Solving Nonlinear Inequalities (Rational Expressions) Homework

Solve. Write the solutions graphically and in interval notation.

① $\frac{2x^2}{9-x^2} + \frac{11x}{9-x^2} \geq \frac{3x}{9-x^2} - \frac{2x^2}{9-x^2}$

② $\frac{36x^2}{5x^2+x-18} > \frac{1}{5x^2+x-18}$

③ $\frac{-3x^3}{x+4} + \frac{12x^2}{x+4} + \frac{36x}{x+4} \leq 0$

④ $\frac{x^4+15x^2-250}{x^3-6x^2+7x-42} < 0$

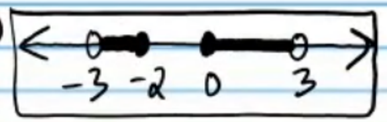
⑤ $0 \leq \frac{x^2+6x+8}{8x^3+125}$

⑥ $\frac{x-7}{x-5} \leq 2$

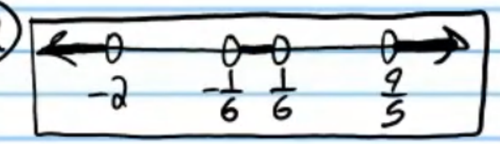
⑦ $-1+\frac{6}{x} > x$

⑧ $\frac{x-7}{x-4} < \frac{-4}{x-3}$

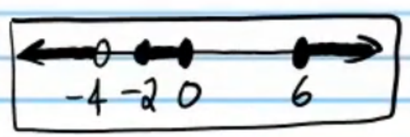
Answers

① 

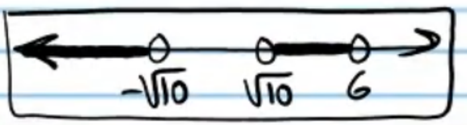
$(-3,-2] \cup [0,3)$

② 

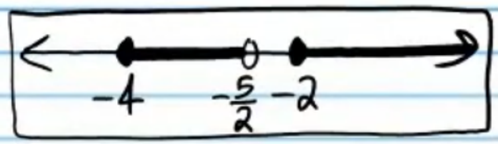
$(-\infty,-2) \cup (-\frac{1}{6},\frac{1}{6}) \cup (\frac{9}{5},\infty)$

③ 

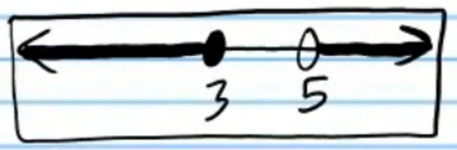
$(-\infty,-4) \cup [-2,0] \cup [6,\infty)$

④ 

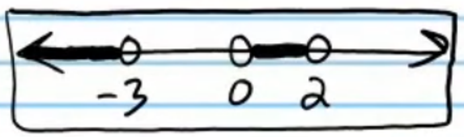
$(-\infty,-\sqrt{10}) \cup (\sqrt{10},6)$

⑤ 

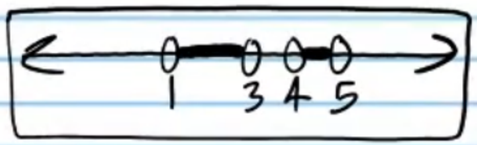
$[-4,-\frac{5}{2}) \cup [-2,\infty)$

⑥ 

$(-\infty,3] \cup (5,\infty)$

⑦ 

$(-\infty,-3) \cup (0,2)$

⑧ 

$(1,3) \cup (4,5)$