Intermediate Algebra Skill

Solving Rational Inequalities: Polynomial Numerator and Denominator; RHS 0

Solve the following Rational Inequalities:

1) $\frac{2x^3+4x}{x^2+5x+6}<0$

2) $\frac{x^2-6x+9}{3x+6x^3}\leq 0$

3) $\frac{2y^2+3y-20}{y^3-y^2}>0$

4) $\frac{3y^2-9y^3}{12y^2+5y-2}\geq 0$

5) $\frac{24y^3-6y^5}{20y^2-7y-6}\leq 0$

6) $\frac{10y^2-13y-30}{2y^5-50y^3}<0$

7) $\frac{n^3-2n^2-n+2}{n^3+3n^2+4n+12}<0$

8) $\frac{n^3+3n^2-4n-12}{n^3-5n^2+4n-20}\leq 0$

9) $\frac{2n^3+5n^2-18n-45}{3n^3-n^2+27n-9}\geq 0$

10) $\frac{12n^3+16n^2-3n-4}{8n^3+12n^2+10n+15}>0$

Answers to Solving Rational Inequalities: Polynomial Numerator and Denominator; RHS 0

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

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

3) $(-4,0)\cup(0,1)\cup\left(\frac{5}{2},\infty\right)$

4) $\left(-\infty,-\frac{2}{3}\right)\cup\left(\frac{1}{4},\frac{1}{3}\right]\cup\{0\}$

5) $\left[-2,-\frac{2}{5}\right)\cup\left[0,\frac{3}{4}\right)\cup[2,\infty)$

6) $(-\infty,-5)\cup\left(-\frac{6}{5},0\right)\cup\left(\frac{5}{2},5\right)$

7) $(-3,-1)\cup(1,2)$

8) $[-3,-2]\cup[2,5)$

9) $(-\infty,-3]\cup\left[-\frac{5}{2},\frac{1}{3}\right)\cup[3,\infty)$

10) $\left(-\infty,-\frac{3}{2}\right)\cup\left(-\frac{4}{3},-\frac{1}{2}\right)\cup\left(\frac{1}{2},\infty\right)$