

Algebra 1B—Chapter 11 Test REVIEW: Rational Functions

SECTION 3

Use Long Division to Simplify Each Expression

8.  $\frac{x^4+3x^3-x^2-x+6}{x+3}$

$= x^3 - x + 2$

10.  $\frac{2x^4+8x^3-5x^2-4x+2}{x^2+4x-2}$

$= 2x^2 - 1$

9.  $\frac{x^3-4x^2+9}{x-3}$

$= x^2 - x - 3$

11.  $\frac{3x^4+9x^3-5x^2-6x+2}{3x^2-2}$

$= x^2 + 3x - 1$

SECTION 4

Design Rational Functions.

Given the following functions, state the roots, any asymptotes—both vertical and horizontal—and any domain restrictions.

12. f(x) so that the function...

a. has a root at  $x=3/2$   $(x - \frac{3}{2})$

b. has a vertical asymptote at  $x=4/5$

$x - \frac{4}{5}$

c. has a horizontal asymptote at  $y=2$

$f(x) = \frac{2(x - \frac{3}{2})}{x - \frac{4}{5}}$  or

b. has a vertical asymptote at  $x=-5$

$g(x) = \frac{x-8}{x+5}$

13. g(x) so that the function...

a. has a root at  $x=8$

$\frac{10x-15}{5x-4}$