Pre-Calculus/Trig 3
2.6: Rational Functions – Worksheet #2

Name: _____
Date: _____

Directions: State the horizontal asymptote of each rational function.

1.) $f(x) = \frac{5}{x-7}$ H.A.: _____	2.) $f(x) = \frac{12x}{x^2-9}$ H.A.: _____	3.) $f(x) = \frac{x+5}{x^2+6x+3}$ H.A.: _____
4.) $y = -\frac{x^5+9}{x^{11}+x^{10}}$ H.A.: _____	5.) $f(x) = \frac{x-8}{6}$ H.A.: _____	6.) $f(x) = \frac{x^5+2x^3+3}{x-4}$ H.A.: _____
7.) $f(x) = \frac{x^3-81}{x+4}$ H.A.: _____	8.) $f(x) = -\frac{x^{13}+x^9+1}{x^7+x^6+x^5}$ H.A.: _____	9.) $f(x) = \frac{5x+9}{x-6}$ H.A.: _____
10.) $f(x) = \frac{2x^2+3x+1}{4x^2+2x+1}$ H.A.: _____	11.) $f(x) = \frac{3x+6x^2-2}{2x-5+7x^2}$ H.A.: _____	12.) $f(x) = \frac{5x^3+2x-9x^4}{2x^4+3-x}$ H.A.: _____

Directions: Given the following rational function, use long division to determine the equation for the slant asymptote.

13.) $f(x) = \frac{x^2-4}{x}$ S.A.: _____	14.) $f(x) = \frac{x^2+5}{x}$ S.A.: _____	15.) $f(x) = \frac{2x^2+1}{x}$ S.A.: _____	16.) $f(x) = \frac{1-x^2}{x}$ S.A.: _____

17.) $f(x) = \dfrac{2x^3 + x^2 - 8x - 4}{x^2 - 3x + 2}$

S.A.: _____

18.) $f(x) = \dfrac{2x^2 - 5x + 5}{x - 2}$

S.A.: _____

19.) $f(x) = \dfrac{2x^3 - x^2 - 2x + 1}{x^2 + 3x + 2}$

S.A.: _____

20.) $f(x) = \dfrac{x^2}{3x + 1}$

S.A.: _____

Directions: Given the following rational functions, determine whether the function has a horizontal asymptote, slant asymptote, or neither. Circle your answer and explain your reasoning.

21.) $f(x) = \dfrac{x^2 - 3x - 28}{x^2 - x - 20}$

Horizontal
Slant
Neither

_____
_____
_____

22.) $f(x) = \dfrac{x^2 - 81}{4x - 36}$

Horizontal
Slant
Neither

_____
_____
_____

23.) $f(x) = \dfrac{x^4 - 21x^3 + 110}{x^2 - 5x - 66}$

Horizontal
Slant
Neither

_____
_____
_____

24.) $f(x) = \dfrac{9x^2 - 49}{12x + 28}$

Horizontal
Slant
Neither

_____
_____
_____

25.) $f(x) = \dfrac{2x^5 + 5x^3 + 3}{2x^4 - 3x^2 - 2}$

Horizontal
Slant
Neither

_____
_____
_____

26.) $f(x) = \dfrac{3x^2 + 13x - 10}{4x^2 + 19x - 5}$

Horizontal
Slant
Neither

_____
_____
_____

27.) $f(x) = \dfrac{2x^6 - 6x^5 - 8}{2x^3 - 8x^2 - 10}$

Horizontal
Slant
Neither

_____
_____
_____

28.) $f(x) = \dfrac{6x + 9}{x^2 - 9}$

Horizontal
Slant
Neither

_____
_____
_____