Asymptotes of Rational Functions

Name:_____

Identify all vertical asymptotes for each function.

1. $f(x)=\dfrac{5x}{x-1}$

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

3. $f(x)=\dfrac{3x^2+x-5}{x^2+1}$

4. $f(x)=1-\dfrac{3}{x-3}$

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

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

Determine whether the graph will have a horizontal or a slant asymptote, then find it.

7. $f(x)=\dfrac{3x^2+1}{x^2+x+9}$

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

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

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

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

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

Based on the asymptotes, match each equation with its graph. (Don't use a calculator!)

____13. $f(x)=\dfrac{1}{x-1}$

____14. $f(x)=\dfrac{5x}{x-1}$

____15. $f(x)=\dfrac{3x^2}{x^2-1}$

____16. $f(x)=\dfrac{4x}{x^2-1}$

____17. $f(x)=-\dfrac{x+2}{x+4}$

____18. $f(x)=\dfrac{x-1}{x-4}$

____19. $f(x)=\dfrac{x+1}{x-3}$

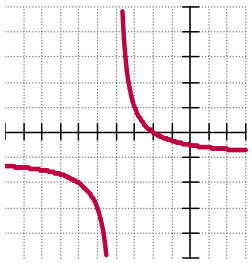
____20. $f(x)=\dfrac{2x}{x-3}$

____21. $f(x)=\dfrac{1-x^2}{x}$

____22. $f(x)=\dfrac{x^2-3x+2}{x}$

____23. $f(x)=\dfrac{1+3x^2-x^3}{x^2}$

A)



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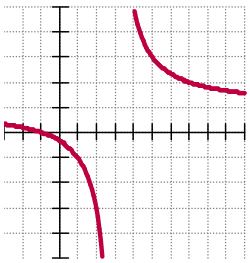

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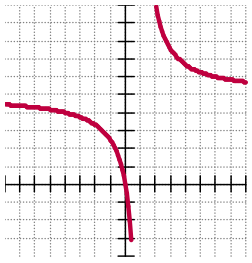

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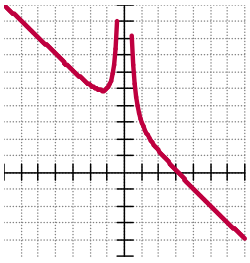

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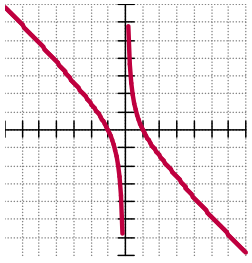

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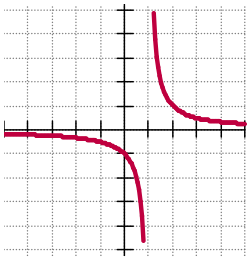

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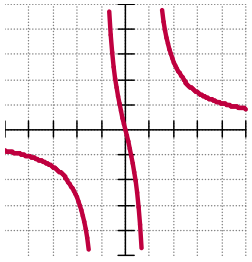

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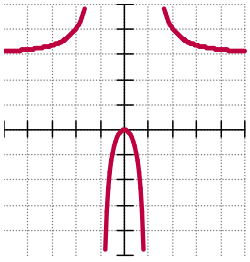

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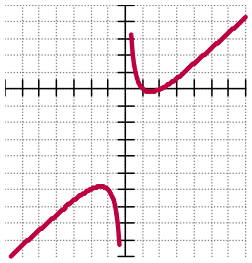

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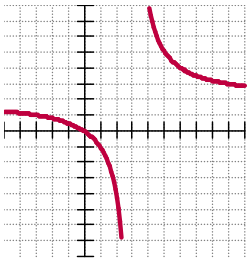

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