Trig Review Ch. 3

Quiz 3.7-3.8 today
Test Ch. 3 is Thurs.

Determine the equations of the vertical and horizontal asymptotes, if any, of each function.

52. $f(x) = \frac{x^1}{(x^1 - 1)}$

53. $g(x) = \frac{x^2 + 1}{(x + 2)}$

VA $x = 1$ $\quad x - 1 = 0$ $\quad +1 \quad +1$

HA $y = 1$ $\quad \frac{x^1}{x^1} = 1$

VA $x = -2$

HA —

SA $y = x - 2$

$$\begin{array}{r|l} & x - 2 \\ \hline x + 2 & x^2 + 1 \\ & -(x^2 + 2x) \\ \hline & -2x + 1 \\ & -(-2x - 4) \\ \hline & 5 \end{array}$$

57. If y varies inversely as the square root of x and $y = 20$ when $x = 49$, find x when $y = 10$.

58. If y varies directly as the square of x and inversely as z and $y = 7.2$ when $x = 0.3$ and $z = 4$, find y when $x = 1$ and $z = 40$.

Write the equation (if asked)

$y = \frac{kx^2}{z}$

$y = \frac{k}{\sqrt{x}}$

$\frac{20}{1} = \frac{k}{7}$ $k = 140$

$y = \frac{320x^2}{z}$

$y = \frac{320 \cdot 1}{40}$ $y = 8$

$\frac{7.2}{1} = \frac{k \cdot 0.3^2}{4}$

$\frac{k(.09)}{.09} = \frac{28.8}{.09}$

$k = 320$

(a,b) (a,-b) (-a,b)

Determine whether the graph of each function is symmetric with respect to the x-axis, y-axis, the line $y = x$, the line $y = -x$, or none of these.

15. $xy = 4$

16. $x + y^2 = 4$

17. $x = -2y$

18. $x^2 = \frac{1}{y}$

(b,a)

(-b,-a)

(18) $a^2 = \frac{1}{b}$ $a^2 = \frac{1}{-b}$ $(-a)^2 = \frac{1}{b}$

$b^2 = \frac{1}{a}$ $(-b)^2 = \frac{1}{-a}$

Describe how the graphs of $f(x)$ and $g(x)$ are related.

19. $f(x) = x^4$ and $g(x) = x^4 + 5$

20. $f(x) = |x|$ and $g(x) = |x + 2|$

Graph each inequality.

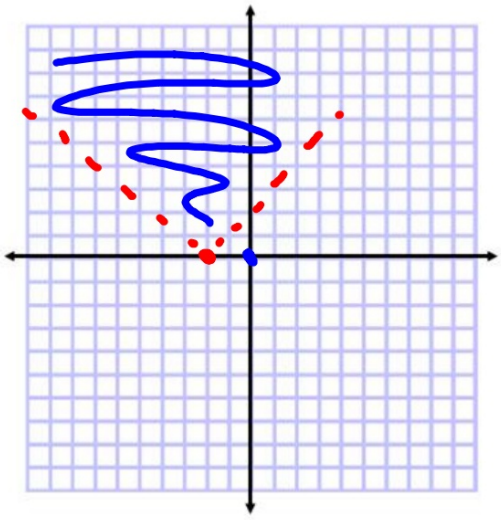
23. $y > |x + 2|$

25. $y < (x + 1)^2 + 1$

$y = |x+2|$

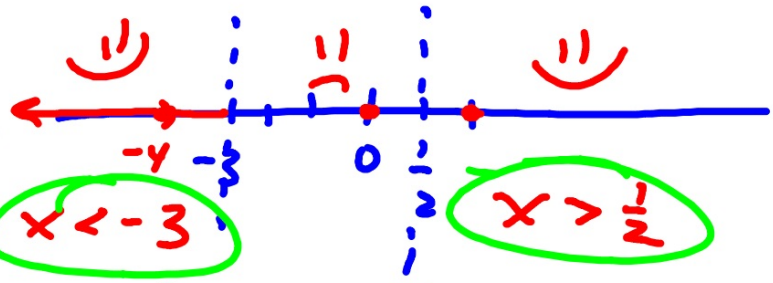
$0 > |2|$

$.0 > 2$



Solve each inequality.

27. $|4x + 5| > 7$



$|4+5| > 7$

$|9| > 7$

$9 > 7$

$\frac{4x}{4} \quad \frac{-12}{4}$

$x = -3$

$4x + 5 = 7$

$-5 \quad -5$

$\frac{4x}{4} = \frac{2}{4}$

$x = \frac{1}{2}$

$-3 < x \not< \frac{1}{2}$

Graph each function and its inverse.

29. $f(x) = 3x - 1$

30. $f(x) = -\frac{1}{4}x + 5$

31. $f(x) = \frac{2}{x} + 3$

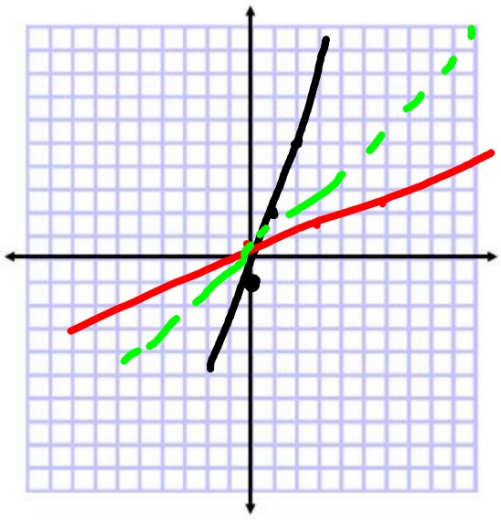
32. $f(x) = (x$

$y = 3x - 1$

$x = 3y - 1$
$+1 \quad +1$

$\frac{x+1}{3} = \frac{3y}{3}$

$y = \frac{1}{3}x + \frac{1}{3}$



Find $f^{-1}(x)$. Then state whether $f^{-1}(x)$ is a function.

33. $f(x) = (x - 2)^3 - 8$

(3-parts)

Determine whether each function is continuous at the given x-value. Justify your response using the continuity test.

35. $y = x^2 + 2; x = 2$

36. $y = \dfrac{x-3}{x+1}; x = -1$

Describe the end behavior of each function.

38. $y = 1 - x^3$ **39.** $f(x) = x^9 + x^7 + 4$

Determine the interval(s) for which the function is increasing and the interval(s) for which the function is decreasing.

42. $y = -2x^3 - 3x^2 + 12x$

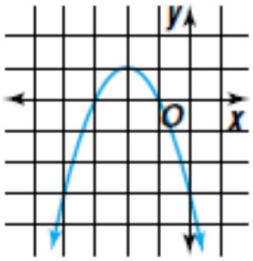
43. $f(x) = |x^2 - 9| + 1$

You need a decent graph to answer these...
Also a good window...

abs max/min
rel max/min
inflection only if asked

Locate the extrema for the graph of $y = f(x)$. Name and classify the extrema of the function.

44.



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