Name:_____ Date:_____

Pre Calculus 11: HW Section 7.4 Reciprocal Functions

1. Given each function, give the equation of its reciprocal function, the equation of the vertical asymptotes, the domain and range, and also the coordinates of the invariant points. Show your work with space provided

a) $y = 3x - 5$

Reciprocal Function: Vertical Asymptotes: Invariant Points:

Domain: Range:

b) $y = -\frac{3}{2}x + 8$

Reciprocal Function: Vertical Asymptotes: Invariant Points:

Domain: Range:

c) $y = x^2 - 5$

Reciprocal Function: Vertical Asymptotes: Invariant Points:

Domain: Range:

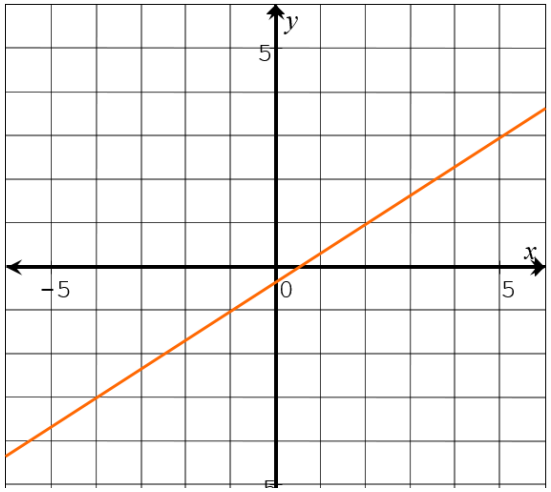
d) $y = (x-3)^2 - 4$

Reciprocal Function: Vertical Asymptotes: Invariant Points:

Domain: Range:

2. Given the graph of $y = f(x)$, graph the reciprocal function $y = \frac{1}{f(x)}$ on the same graph. Label the vertical asymptotes and the invariant points on the graph:

a)



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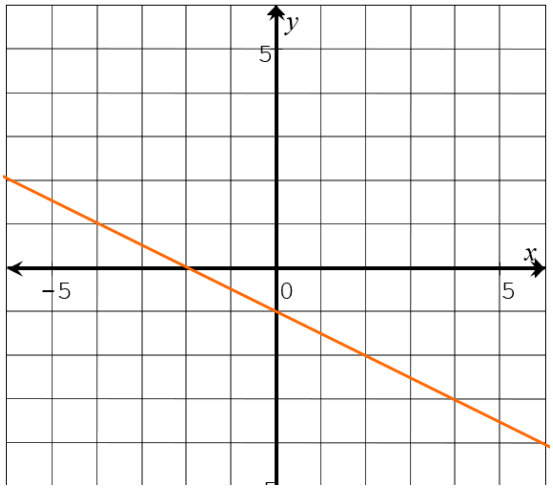

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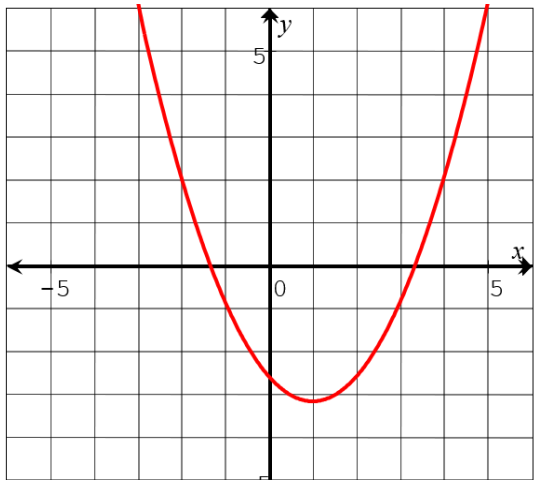

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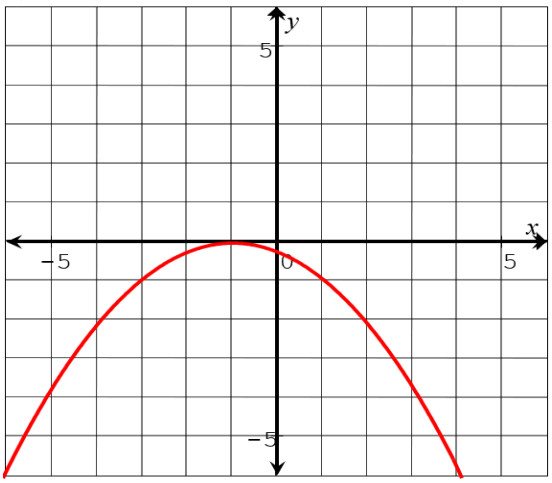

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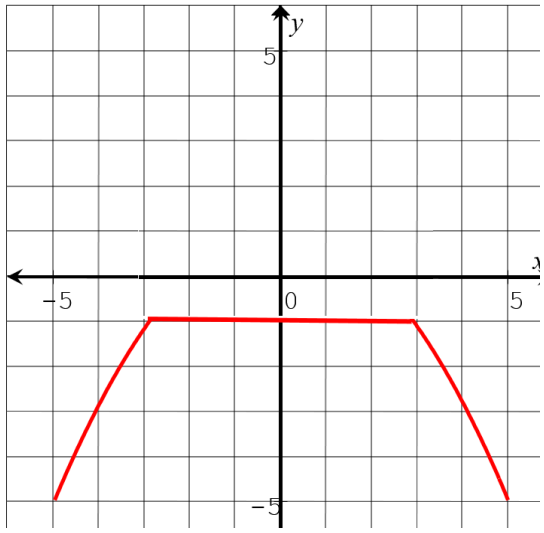

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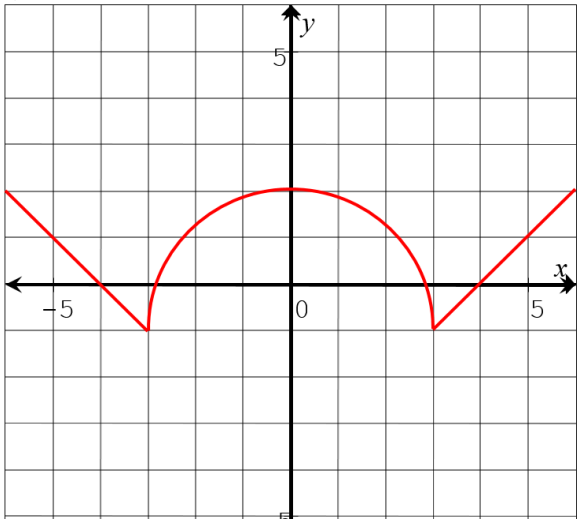
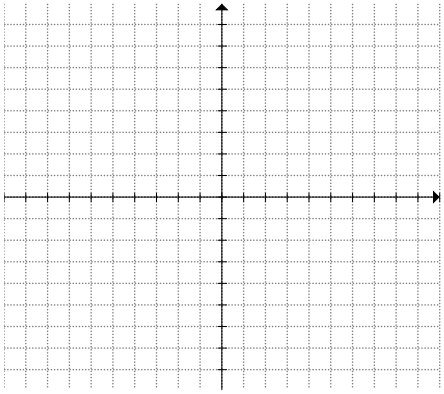


3. Given the equation for $y = f(x)$, find the equation for $y = \dfrac{1}{f(x)}$

a) $y = 3x - 5$	b) $y = \dfrac{2x-1}{3}$	c) $y = \dfrac{3x-5}{5x-1}$	d) $y = 3x^2 + 4$
e) $y = 3$	f) $x = -5$	g) $y = -5x^2 - 6$	h) $y = 5x^3 - 7x^2 + 22 - 6x$

4. Graph the each of the following reciprocal functions. Indicate the asymptotes, coordinates of the invariant points, domain and range:

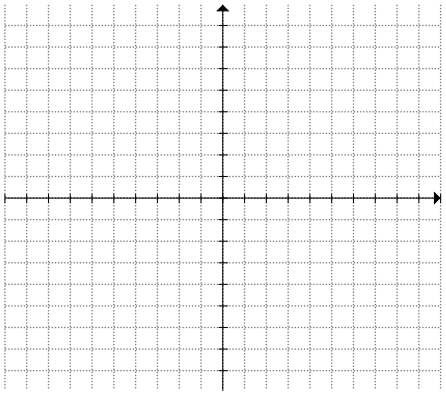
a) $y = \dfrac{1}{x-6}$



Invariant Pts: Asymptotes:

Domain: Range:

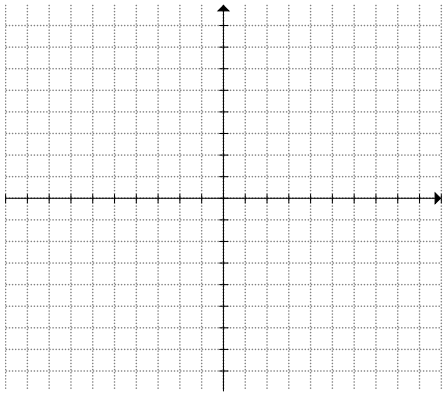
b) $y = -\dfrac{1}{2x+4}$



Invariant Pts: Asymptotes:

Domain: Range:

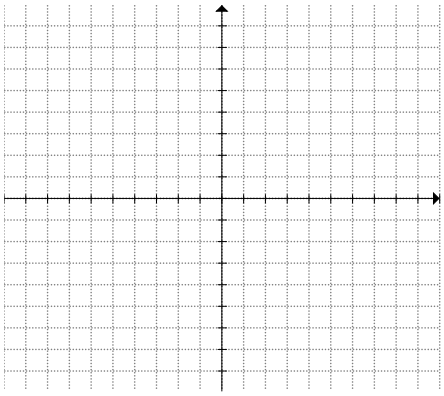
b) $y = \dfrac{1}{(x-1)^2}$



Invariant Pts: Asymptotes:

Domain: Range:

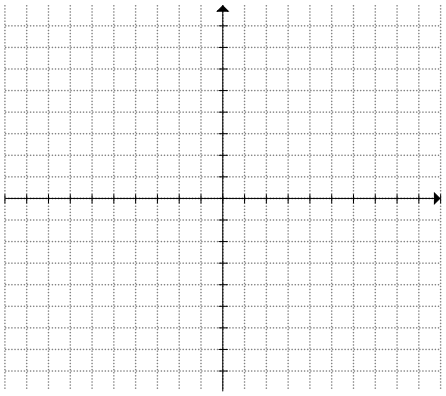
a) $y = \dfrac{1}{x^2-3}$



Invariant Pts: Asymptotes:

Domain: Range:

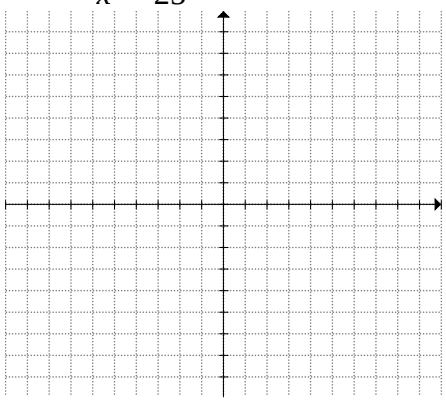
b) $y = -\dfrac{1}{2x^2+1}$



Invariant Pts: Asymptotes:

Domain: Range:

b) $y = \dfrac{1}{x^2-25}$



Invariant Pts: Asymptotes:

Domain: Range:

5. The following points $(3,5)$, $(-3,-7)$, $(-2,8)$, $(7,-10)$, and $(-3,-9)$ are on the function $y=f(x)$.

   What will the coordinates be on the function: $y=\dfrac{1}{f(x)}$?