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Name: _____ Date: _____

MCR3U

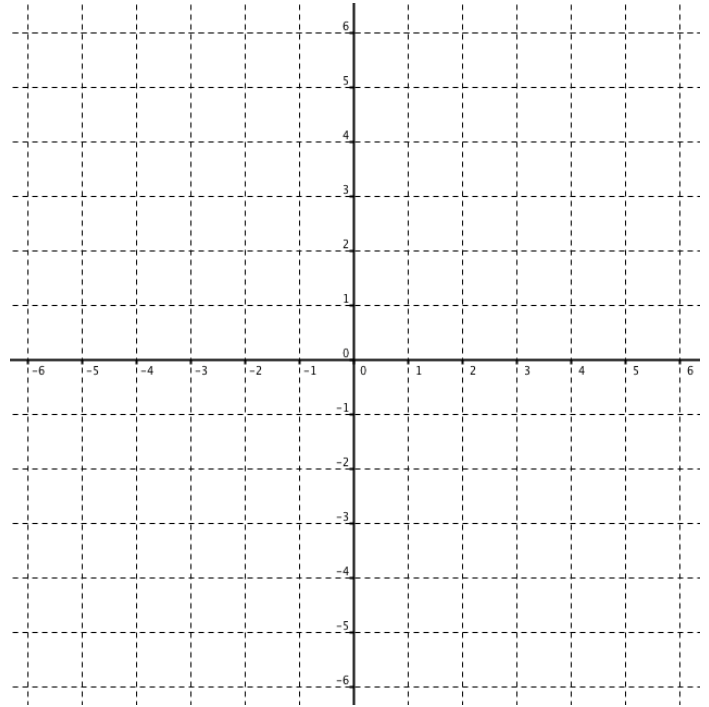
Test: Inverse and reciprocal functions

/3
K

1. Determine the equation of the inverse, $f^{-1}(x)$, of the function $f(x) = \frac{3}{4}x + 6$.

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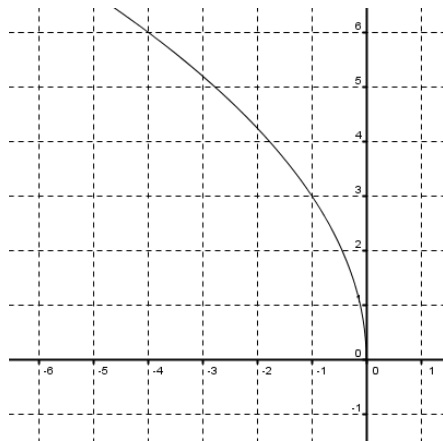
2. Graph the inverse, $g^{-1}(x)$, of the function $g(x) = (x+3)^2 - 2$.



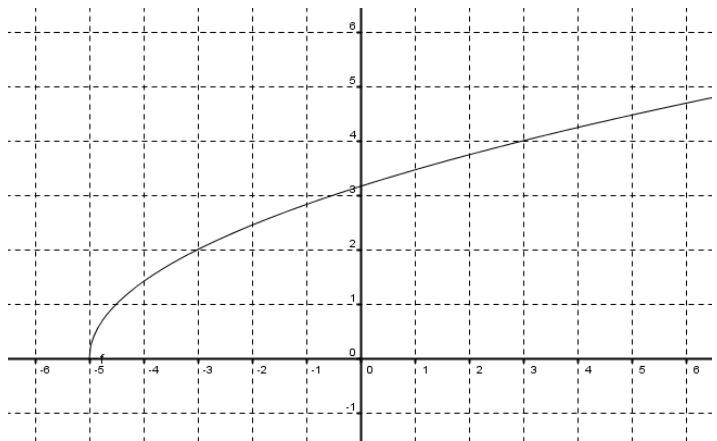
/4
K

3. Determine equations for the functions shown in the graphs below.

a)



b)



/2
C

4. Describe how to transform the base graph $f(x) = \sqrt{x}$ in order to graph $n(x) = \sqrt{\frac{1}{4}x} + 3$.

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5. Evaluate $f(x) = 5\sqrt{4(x+2)}$ for an input value of $x = 10$. Provide an exact answer in simplified form.

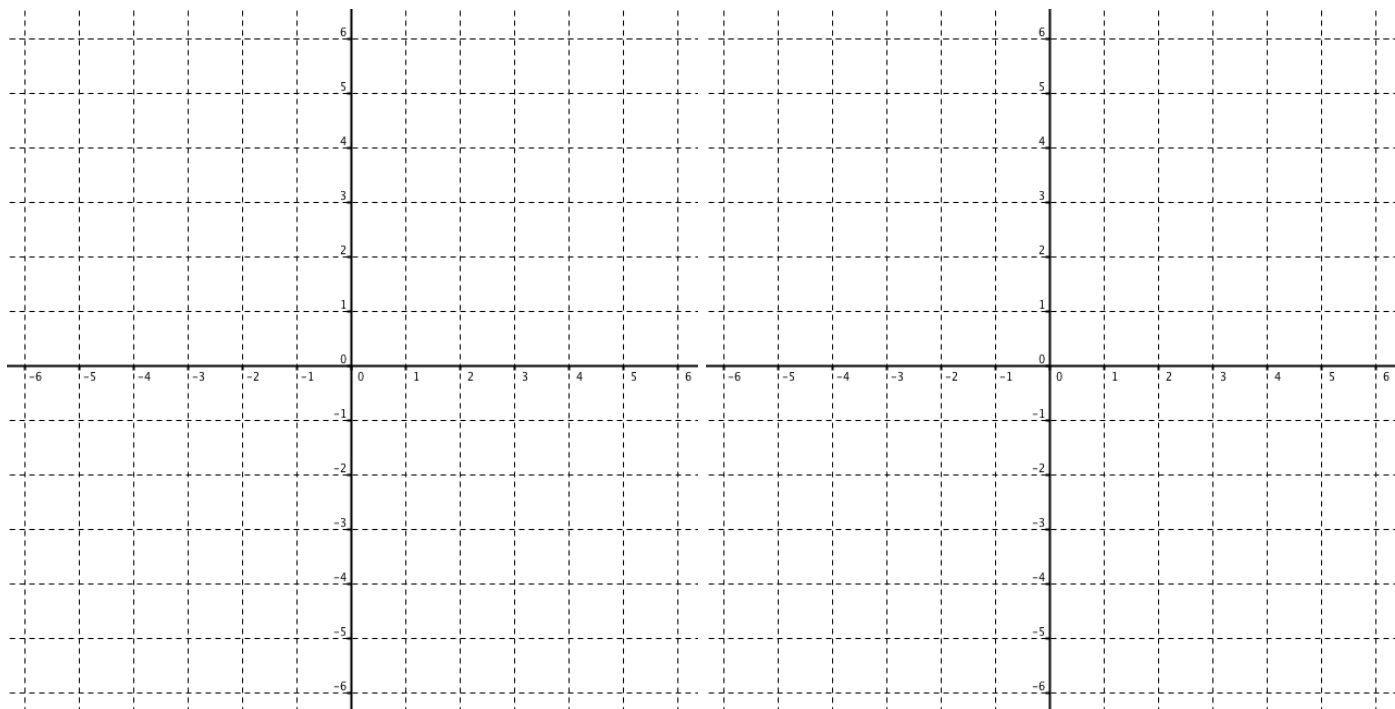
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6. Graph each of the following functions. Mark all points in the domain and range of the grid provided.

$$f(x) = -\sqrt{x+4} + 2$$

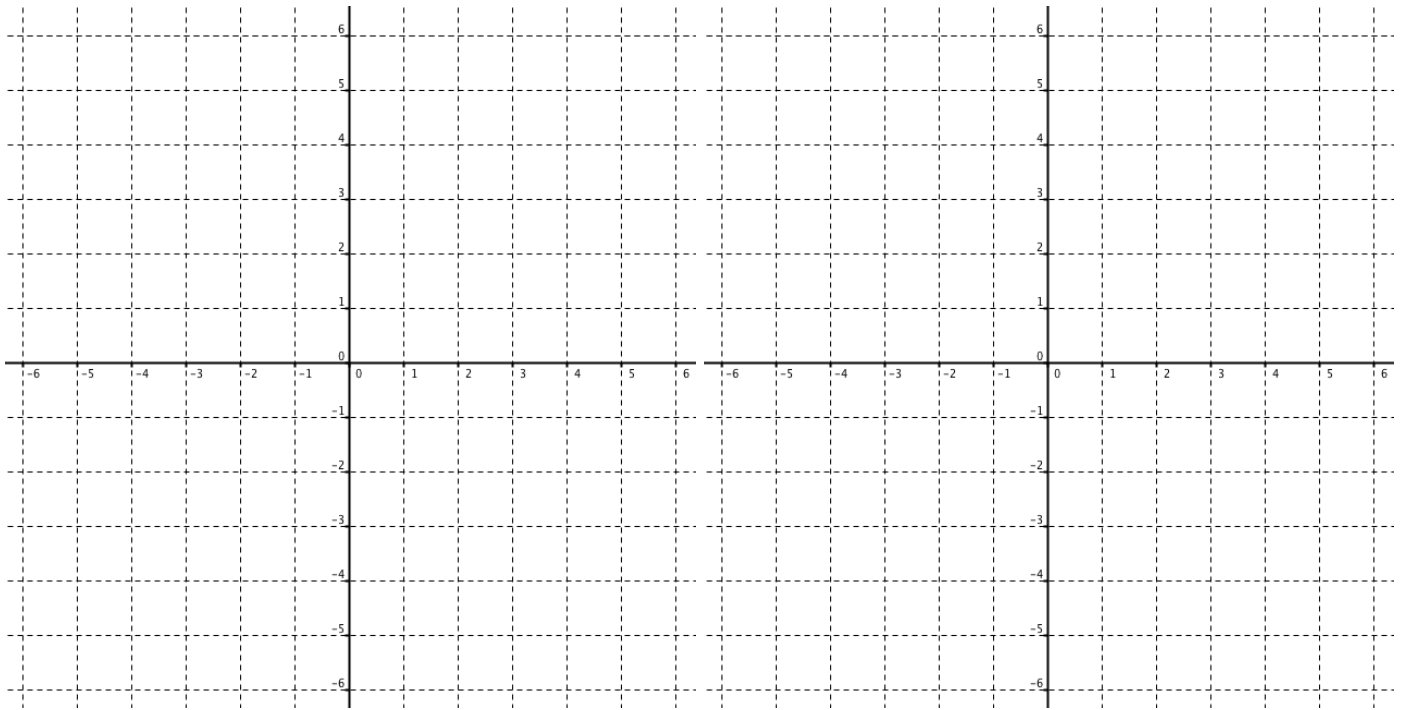
$$g(x) = \sqrt{3-x}$$

/4
T



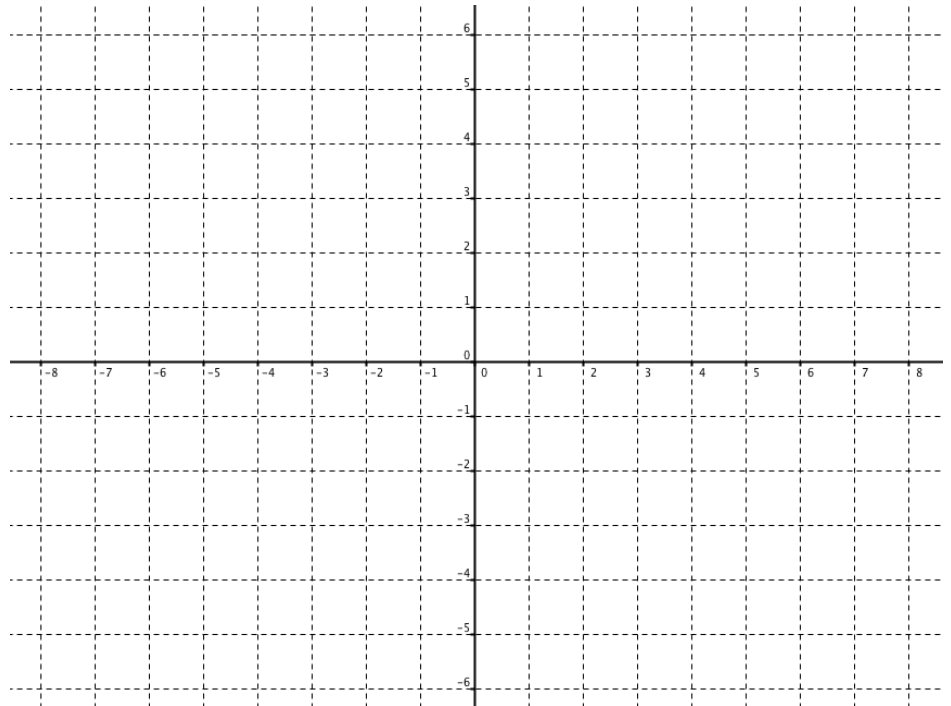
$$h(x) = \frac{3}{x+1}$$

$$k(x) = 2 - \frac{1}{x}$$



/3
T

7. Graph the reciprocal of the linear function $y = 2x + 8$.

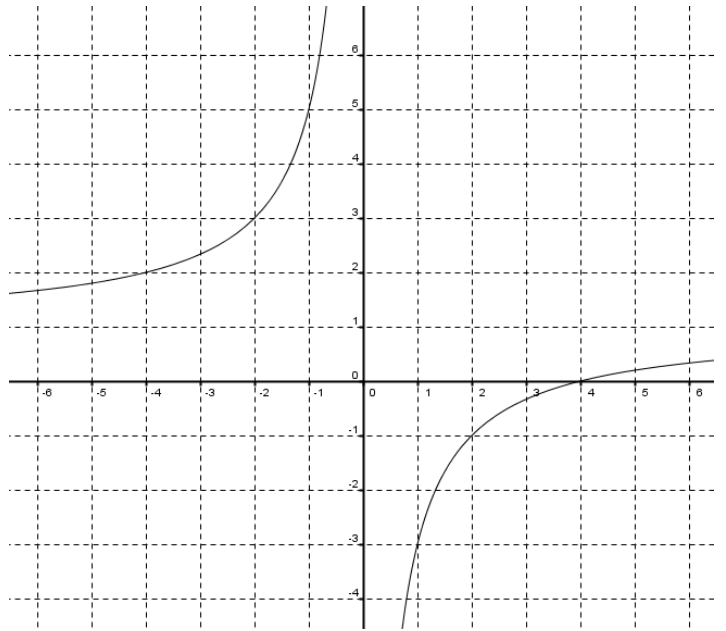
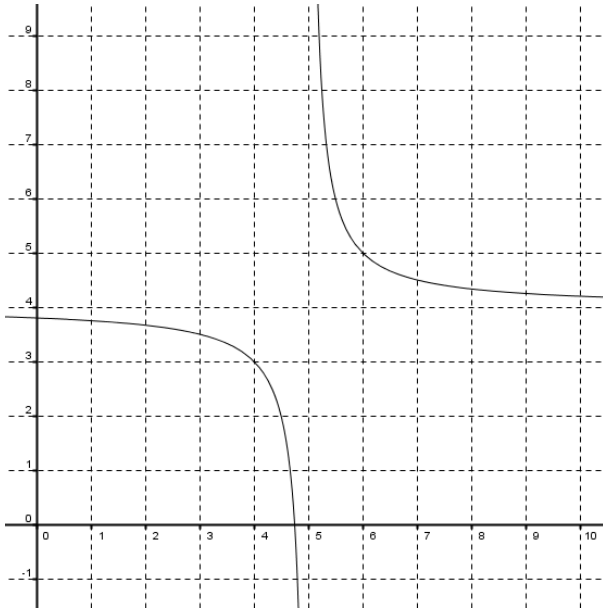


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K

8. Determine equations for the functions shown in the graphs below.

a)

b)



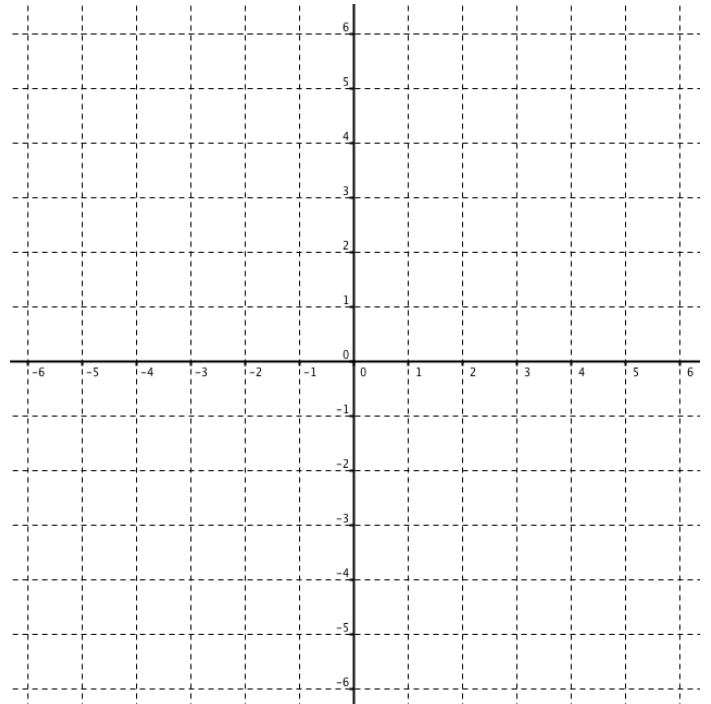
/2
C

9. The inverse of a function is often confused with the reciprocal of a function because they both represent the “opposite of a function.” Explain how they are different from one another.

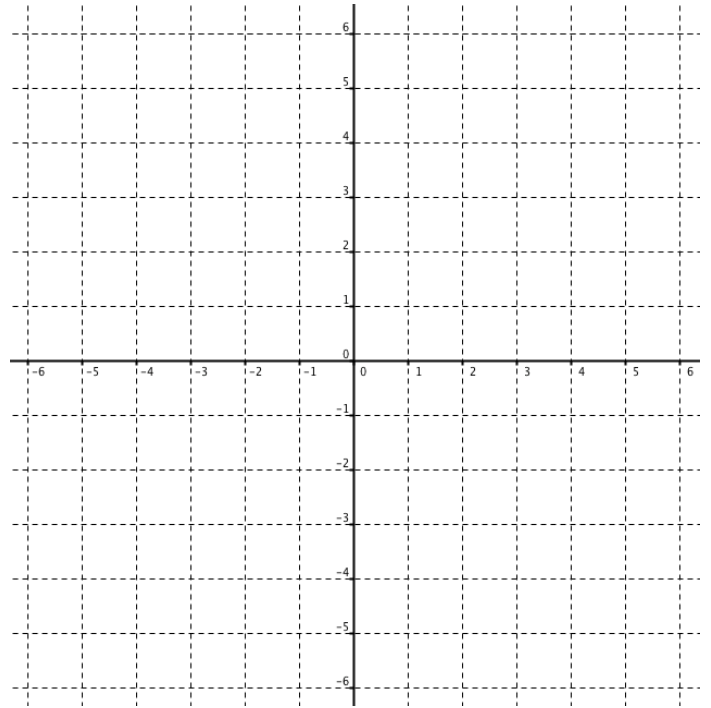
/9
A

10. Simplify and graph the following functions.

a) $y = \frac{2x-4}{x^2-5x+6}$



b) $y = \frac{2x^2 + 11x + 12}{x + 4}$



/8
K

11. Simplify the following rational expressions. State all restrictions.

a) $\frac{x+6}{x^2+2x-24} \div \frac{3}{x-4}$

b) $\frac{2}{x+3} - 4$

/6
K

12. Expand and simplify the following radical expressions.

a) $(\sqrt{8}+3)(5-\sqrt{2})$

b) $(6\sqrt{5})(\sqrt{12})$

/2
C

13. Three math students were trying to simplify the expression $\frac{12+\sqrt{18}}{6}$. One student said that the answer should be $2+\sqrt{18}$. Another student said that it should be $\frac{4+\sqrt{2}}{3}$. The third student said that it should be $2+\sqrt{3}$. Which of the three students is correct? Justify your answer by explaining why they are correct, or why the others are incorrect.