PREC12 Rational Functions Name: _____

Worksheet

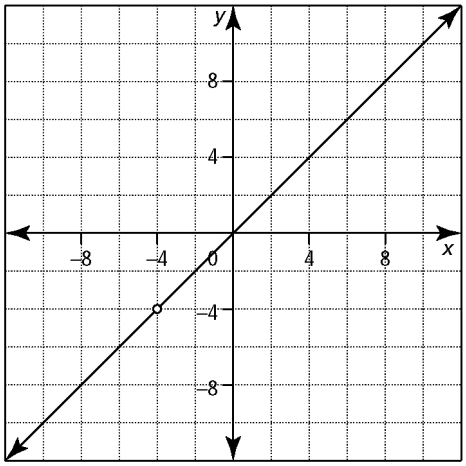
Analyze each function and predict the location of any VERTICAL asymptotes, HORIZONTAL asymptotes, HOLES (points of discontinuity), *x*- and *y*-INTERCEPTS, DOMAIN, and RANGE.

Characteristic	$y = \frac{2x-1}{x-7}$	$y = \frac{x^2+5x}{x^2+7x+10}$	$y = \frac{x^2-7x+12}{x^2-9}$	$y = \frac{2x^2+5x-3}{x+3}$
Vertical Asymptote(s) *Analyze Denominator*				
Horizontal Asymptote(s) *Analyze Degrees of Polynomial (num/den) (m<n, m=n, m>n)*				
HOLES Point(s) of Discontinuity *Simplify the Rational Function by factoring*				
x-intercept(s) *Set y=0*				
y-intercept *Set x=0*				
Domain				
Range				

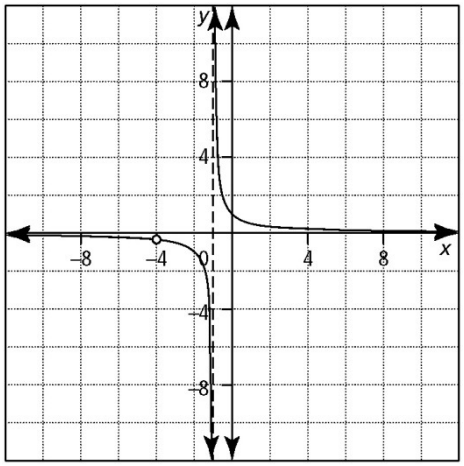
Match the equation of each rational function with the most appropriate graph. Explain your reasoning.

$$y = \frac{x+4}{x^2-3x-4} \qquad y = \frac{x+4}{x^2+5x+4} \qquad y = \frac{x^2+4x}{x+4}$$

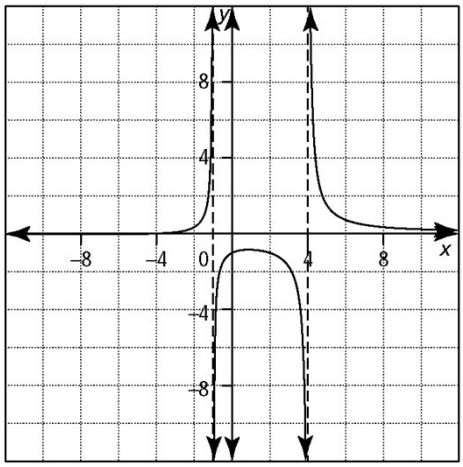
A



B

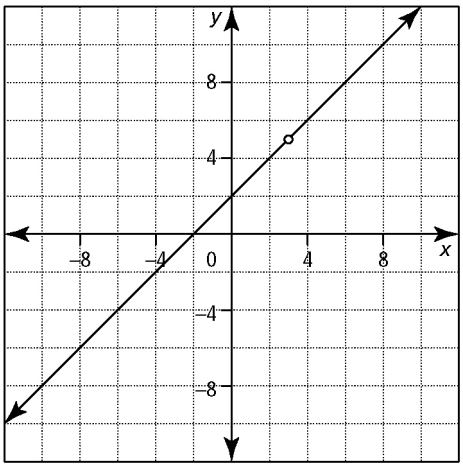


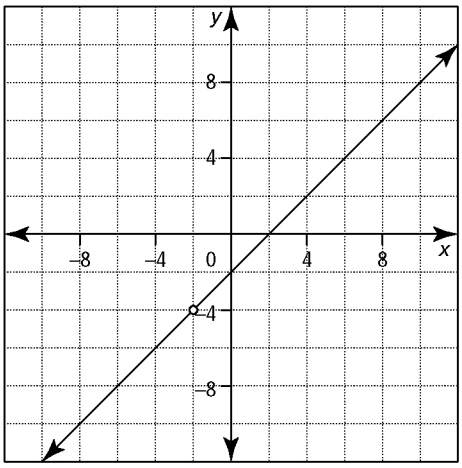
C

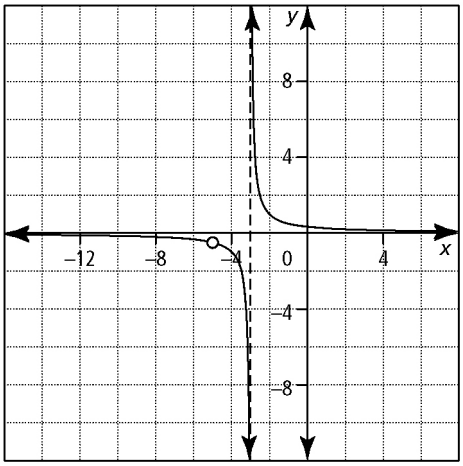


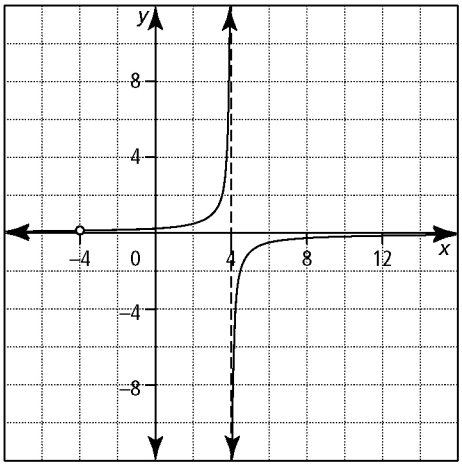
Complete the assignment on pp.134 to 136: # 1 to 4 first before trying the questions below:

Write the equation for each graphed rational function.









PREC12 Rational Functions Name: _____
Worksheet **ANSWER KEY**

Analyze each function and predict the location of any VERTICAL asymptotes, HORIZONTAL asymptotes, HOLES (points of discontinuity), *x*- and *y*-INTERCEPTS, DOMAIN, and RANGE.

Characteristic	$y=\frac{2x-1}{x-7}$	$y=\frac{x^2+5x}{x^2+7x+10}$	$y=\frac{x^2-7x+12}{x^2-9}$	$y=\frac{2x^2+5x-3}{x+3}$
Vertical Asymptote(s) *Analyze Denominator*	$x=7$	$x=-2$	$x=-3$	no vertical asymptote
Horizontal Asymptote(s) *Analyze Degrees of Polynomial (num/den) (m<n, m=n, m>n)*	$y=2$	$y=1$	$y=1$	no horizontal asymptote
HOLES Point(s) of Discontinuity *Simplify the Rational Function by factoring*	none	$(-5, \frac{5}{3})$	$(3, -\frac{1}{16})$	$(-3, -7)$
x-intercept(s) *Set y=0*	$(\frac{1}{2}, 0)$	(0, 0)	(4, 0)	$(\frac{1}{2}, 0)$
y-intercept *Set x=0*	$(0, \frac{1}{7})$	(0, 0)	$(0, -\frac{4}{3})$	(0, –1)
Domain	$\{x \mid x \neq 7, x \in R\}$	$\{x \mid x \neq -2, x \neq -5, x \in R\}$	$\{x \mid x \neq -3, x \neq 3, x \in R\}$	$\{x \mid x \neq -3, x \in R\}$
Range	$\{y \mid y \neq 2, y \in R\}$	$\{y \mid y \neq 1, y \neq \frac{5}{3}, y \in R\}$	$\{y \mid y \neq 1, y \neq -\frac{1}{16}, y \in R\}$	$\{y \mid y \neq -7, y \in R\}$

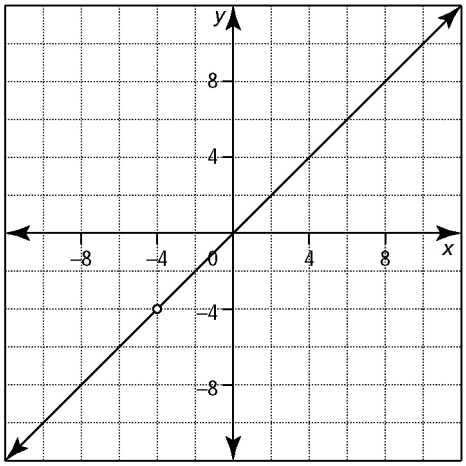
Match the equation of each rational function with the most appropriate graph. Explain your reasoning.

$y = \dfrac{x+4}{x^2-3x-4}$ (C)

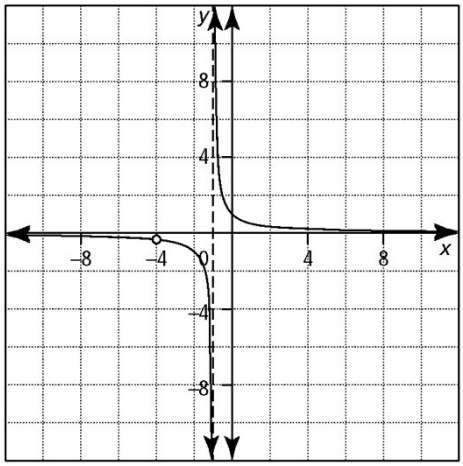
$y = \dfrac{x+4}{x^2+5x+4}$ (B)

$y = \dfrac{x^2+4x}{x+4}$ (A)

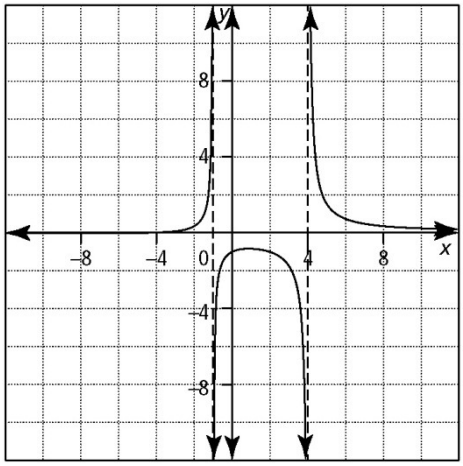
A



B

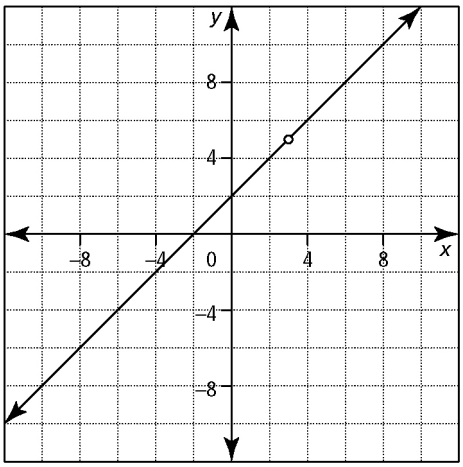


C



Complete the assignment on pp.134 to 136: # 1 to 4 first before trying the questions below:

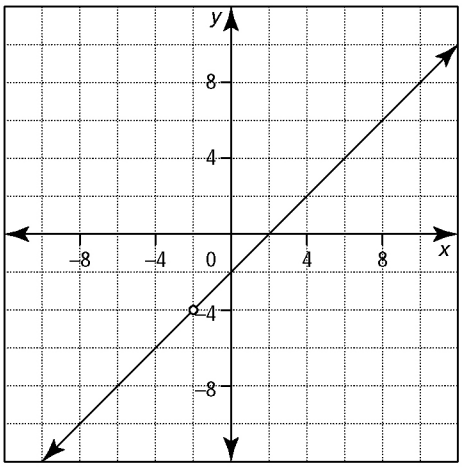
Write the equation for each graphed rational function.



$y = \dfrac{(x-3)(x+2)}{(x-3)}$

Or

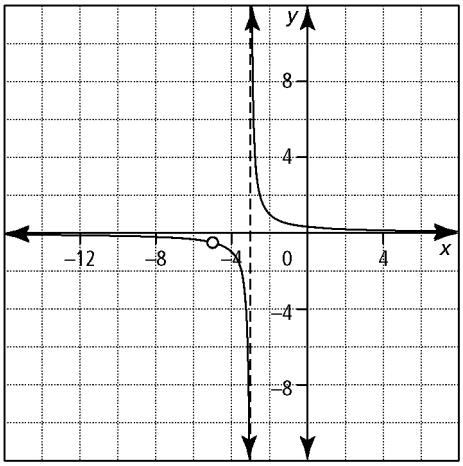
$y = \dfrac{x^2-x-6}{x-3}$



$y = \dfrac{(x-2)(x+2)}{(x+2)}$

Or

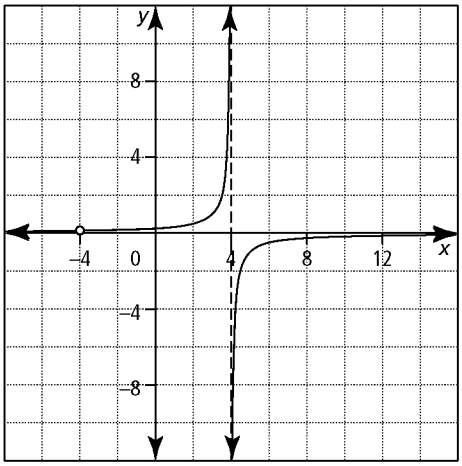
$y = \dfrac{x^2-4}{x+2}$



$y = \dfrac{(x+5)}{(x+3)(x+5)}$

Or

$y = \dfrac{x+5}{x^2+8x+15}$



$y = \dfrac{(x+4)}{(4-x)(4+x)}$

Or

$y = \dfrac{x+4}{16-x^2}$