## Lesson 6E

# Sign on the Dotted Line

### Practice Understanding

## Ready

Determine which of the suggested values for $x$ are solutions for the given equation.

1. $\frac{x+1}{8} = \frac{2}{x+1}$

   A. $x = 0$

   B. $x = -5$

   C. $x = 3$

   B and C.

2. $\frac{5}{x-3} - \frac{6}{x^2-9} = \frac{4}{x+3}$

   A. $x = -21$

   B. $x = -3$

   A.

3. $\frac{1}{10}x^2 - \frac{1}{2}x = 5$

   A. $x = -5$

   B. $x = 10$

   A and B.

4. $\frac{1}{3}x^2 + \frac{5}{12}x = \frac{1}{2}$

A. $x = -2$

B. $x = \frac{3}{4}$

C. $x = 1$

A and B.

5. $\frac{2x-3}{2x+3} = \frac{x-2}{2x-3}$

A. $x = -\frac{3}{2}$

B. $x = \frac{5}{2}$

C. $x = 3$

B and C.

6. $-20 = \frac{(x+4)\,(x-5)\,(x+1)}{2}$

A. $x = -1$

B. $x = 0$

C. $x = 1$

C.

## Set

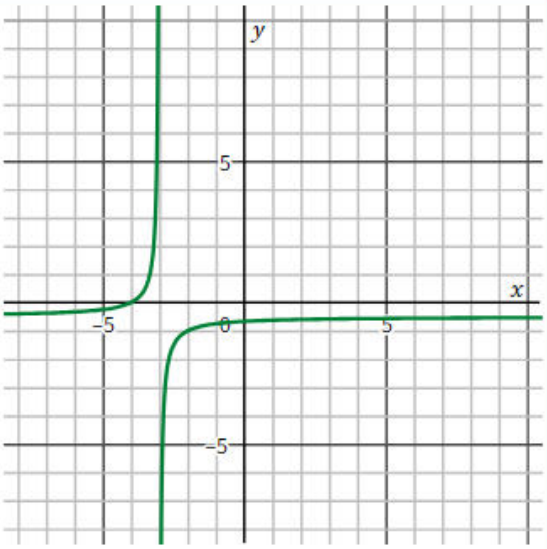
Find the vertical asymptote(s), horizontal or slant asymptote, and intercepts. Then sketch the graph. (Do not use technology to get the graph. The maximums and minimums do not need to be accurate.)

7. $y = \frac{(x+4)}{(-2x-6)}$

Vertical Asymptote(s): $x = -3$

Horizontal or Slant Asymptote: *H.A.*
$y = -\frac{1}{2}$

Intercepts: $\left(0, -\frac{2}{3}\right)$ $(-4, 0)$

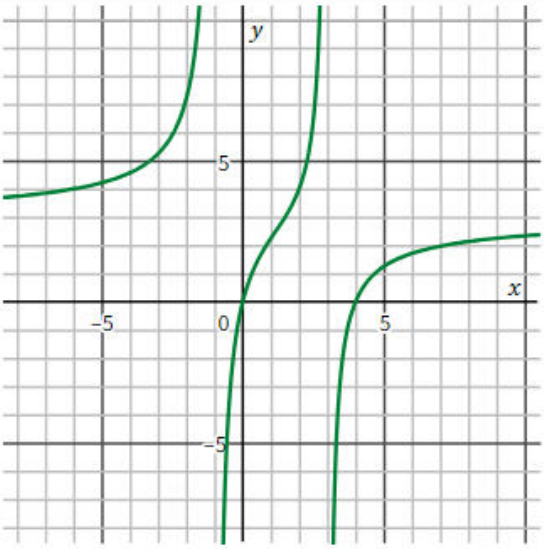



**8.** $y = \dfrac{3x}{(x-3)} \cdot \dfrac{(x-4)}{(x+1)}$

*Vertical Asymptote(s) :* $x = 3$ *and*
$x = -1$

Horizontal or Slant Asymptote: *H.A.*
$y = 3$

Intercepts: $(0, 0)$ $(4, 0)$

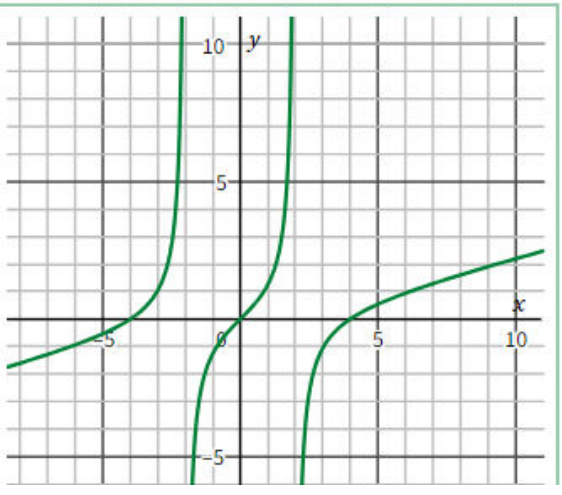



**9.** $y = \dfrac{(x^2 - 4x)}{(4x-8)} \div \dfrac{(x+2)}{x+4}$

Vertical Asymptote(s): $x = 2$ *and*
$x = -2$

Horizontal or Slant Asymptote: *S.A.:*
$y = \frac{1}{4}x$

Intercepts: $(0, 0)$ $(4, 0)$ $(-4, 0)$

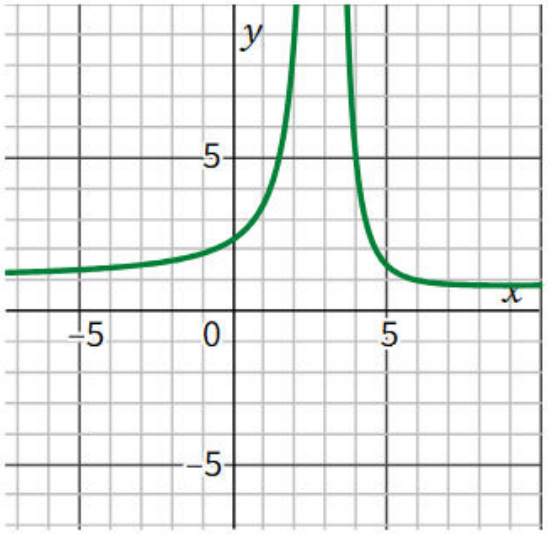


**10.** $y = \dfrac{(x-6)}{(x-3)} + \dfrac{(x+3)}{x^2-6x+9}$

Vertical Asymptote(s): $x = 3$

Horizontal or Slant Asymptote: *H.A.*
$y = 1$

Intercepts: $\left(0, \frac{7}{3}\right)$




## Go

**11.** Rewrite $f(x) = \frac{x^2-2x-63}{x+7}$ in an equivalent form.

$f(x) = x - 9$

**12.** Describe some of the key features of the graph of $f(x) = \frac{x^2-2x-63}{x+7}$.

It's a line with slope $1$ and $y$-intercept $-9$. It has a hole at $x = -7$. It's always increasing. Domain: $(-\infty, -7) \cup (-7, \infty)$

**13.** Rewrite $g(x) = \frac{x^2+7x+4}{x+1}$ in an equivalent form.

$$g(x) = x + 6 + \frac{-2}{x+1}$$

**14.** Describe some of the key features of the graph of $g(x) = \frac{x^2+7x+4}{x+1}$.

Domain: $(-\infty, -1) \cup (-1, \infty)$. It's always increasing. It has a $y$-intercept at $(0, 4)$. The vertical asymptote is $x = -1$. It has a slant asymptote at $y = x + 6$.

**15.** Given $h(x) = \frac{6x+6}{2x-2}$, write the equations of the asymptotes.

**a.** $x =$ _____ **b.** $y =$ _____

$x = 1$ | $y = 3$

**16.** Given $(x) = \frac{6x+6}{2x-2}$, find the $x$-intercept(s) and $y$-intercept, if they exist.

**a.** $x$-intercept: **b.** $y$-intercept:

$x-$intercept: $(-1, 0)$ | $y$-intercept: $(0, -3)$

**17.** Graph $h(x)$. (Include the asymptotes as dotted lines.)