

3.6: Rational Functions and their Graphs

1. If $y = 3$ is the horizontal asymptote of the function $f(x) = \frac{ax+12}{2x-5}$,
then the x -intercept of the graph of f is

A) -2

B) $-\frac{1}{2}$

C) $\frac{5}{2}$

D) 3

E) 6

2. If $x = 2$ is the vertical asymptote of the function $r(x) = \frac{3-(a+1)x}{4-ax}$,
then its horizontal asymptote is

A) $y = \frac{3}{2}$

B) $y = -\frac{2}{3}$

C) $y = \frac{3}{4}$

D) $y = 3$

E) $y = 2$

3. The graph of $f(x) = \frac{(2a-1)x+1}{ax-6}$ has the line $x = 2$ as vertical asymptote, then it has a horizontal asymptote

A) $y = 5/3$

B) $y = 2/3$

C) $y = 3/2$

D) $y = 1/3$

E) $y = 2$

4. If the graph of the rational function $f(x) = \frac{ax+c}{1-bx}$ is as given below, then the value of $a + b + c$ is equal to

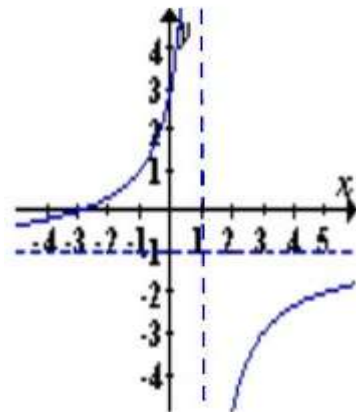
A) 5

B) -1

C) -2

D) 6

E) 1



5. If $y = -3$ is a horizontal asymptote for graph of $g(x) =$

$$\frac{(Ax^2+x+2)(x+3)}{(2x^2-x-1)(x-3)}, \text{ then the vertical asymptote}$$

A) are $x = 1$ and $x = 3$

B) is $x = 1$

C) are $x = 1$ and $x = -1/2$

D) are $x = 1$ and $x = 1/2$

E) is $x = 1/2$

6. The asymptotes of the graph of the function $f(x) = \frac{x^2-x-2}{x^2+x-6}$ are

A) one vertical and one horizontal

B) two vertical and one horizontal

C) two vertical asymptotes

D) one horizontal asymptote only

E) one vertical and two horizontal

7. The rational function $f(x) = \frac{ax^2+2x+1}{bx-4}$ has a horizontal asymptote if

A) $a = 0, b \neq 0$

B) $a \neq 0, b = 0$

C) $a \neq 0, b \neq 0$

D) $a = 0, b = 0$

E) a, b are any real numbers.

8. Which one of the following functions has the graph given below?

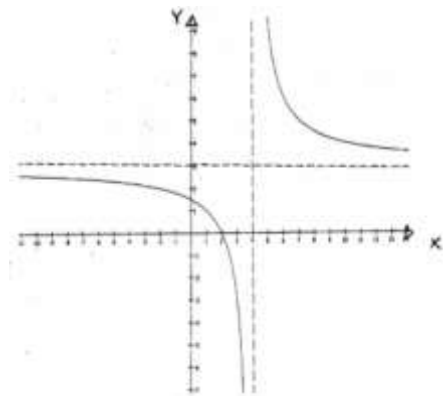
A) $f(x) = \frac{3-x}{4-x}$

B) $f(x) = \frac{2-3x}{4-x}$

C) $f(x) = \frac{x-3}{x-4}$

D) $f(x) = \frac{6-3x}{4-x}$

E) $f(x) = \frac{3x-12}{4x-16}$



If $y = \frac{5}{3}$ is the horizontal seymptote of the function $f(x) = \frac{10x^2-13x-3}{kx^2-5x-6}$,
then the x -intercept of the graph of $f(x)$ is

A) $-\frac{1}{5}$

B) $-\frac{3}{2}$

C) $-\frac{2}{3}$

D) $\frac{3}{2}$

E) $\frac{3}{5}$