

College Algebra Worksheet (8)

Multiple Choice Questions on Rational Functions

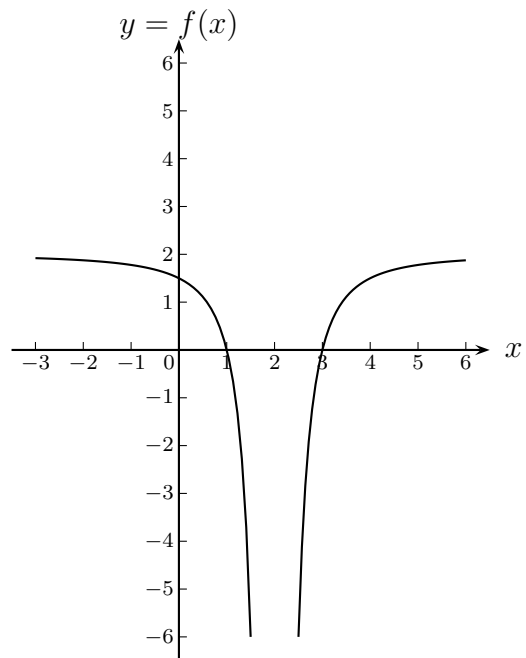
1. Find the function f whose graph is given below.

a. $f(x) = \frac{(x-1)(x-3)}{(x-2)^2}$

b. $f(x) = \frac{2(x-1)(x-3)}{(x-2)}$

c. $f(x) = \frac{2(x-1)(x-3)}{(x-2)^3}$

d. $f(x) = \frac{2(x-1)(x-3)}{(x-2)^2}$



2. If function f is defined by $f(x) = \frac{4x^2 - 12x}{x^2 - 9}$, then at $x = 3$

- a. the graph of f has a vertical asymptote.
- b. the graph of f has a hole on the x axis.
- c. $f(x) = 0$
- d. the graph of f has a hole at $(3, 2)$.

3. Which of the following functions has an oblique asymptote?

a. $f(x) = \frac{x^5 + 1}{x^4 + 3x^2 + 2}$

b. $f(x) = \frac{x^2 + 1}{x^3 - x^2 - 1}$

c. $f(x) = \frac{4x^2 + x + 1}{x^2}$

d. $f(x) = \frac{x^5}{x^2 - 1}$

4. Find the equation of the oblique asymptote of the function $f(x) = \frac{x^2 - 11x + 30}{x - 4}$

- a. $y = x - 4$
- b. $y = x + 4$
- c. $y = x - 7$
- d. $y = x + 7$

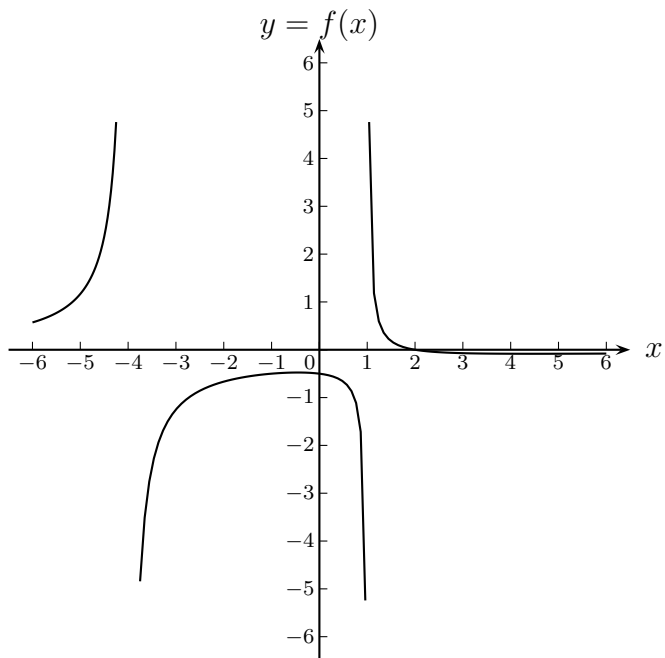
5. Find the function f whose graph is given below.

a. $f(x) = \frac{x - 2}{x^2 + 3x - 4}$

b. $f(x) = \frac{2 - x}{x^2 + 3x - 4}$

c. $f(x) = \frac{x - 2}{x^2 - 3x - 4}$

d. $f(x) = \frac{2 - x}{x^2 - 3x - 4}$



6. Which of the following functions has no horizontal asymptote?

a. $f(x) = \frac{x^2 - 2}{x^3 - 9x - 4}$

b. $f(x) = \frac{5x^4 - 2^3 - x + 7}{-x^3 + 3x^2 - 4}$

c. $f(x) = \frac{9x^2 - 2x - 3}{x^2 + 8x - 2}$

d. $f(x) = \frac{1}{x^2 - x}$

7. Which of the following functions has a hole at (1,4)?

a. $f(x) = \frac{x - 1}{(x - 1)(x - 5)}$

b. $f(x) = \frac{x - 1}{(x + 1)^2}$

c. $f(x) = \frac{4}{x - 1}$

d. $f(x) = \frac{(x - 1)(11x + 1)}{(x - 1)(x + 2)}$

8. Which of the following functions has a zero, a vertical asymptote and a horizontal asymptote?

a. $f(x) = \frac{x - 4}{(x - 4)(x - 5)}$

b. $f(x) = \frac{(x + 2)(x^2 + 1)}{(x - 4)(x^2 + 7)}$

c. $f(x) = \frac{x^2 + 5}{(x - 4)(x - 5)}$

d. $f(x) = \frac{(x - 5)(x^2 + 8)}{(x - 4)}$

9. Which of these functions has no vertical asymptotes?

a. $f(x) = \frac{x - 7}{(x - 7)(x - 5)}$

b. $f(x) = \frac{x}{x^2 - x - 1}$

c. $f(x) = \frac{1}{x - 2}$

d. $f(x) = \frac{x^2 - 9x + 20}{(x - 4)(x - 5)}$

10. Which of the following functions has a hole, one zero, an oblique asymptote and no vertical asymptote?

a. $f(x) = \frac{(x - 7)(x^2 + 1)}{(x - 7)(x - 5)}$

b. $f(x) = \frac{(x - 7)(x^2 - 1)}{(x - 7)(x - 2)}$

c. $f(x) = \frac{(x - 7)(x^3 - 4)}{(x - 7)(x^2 + 5)}$

d. $f(x) = \frac{x - 7}{(x - 7)(x - 5)}$