

1. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{8x^3 + 22x^2 - 21x - 45}{8x^2 - 22x + 15}$$

- A. Vertical Asymptotes of $x = 1.25$ and $x = -1.25$ with a hole at $x = 1.5$
 - B. Holes at $x = 1.25$ and $x = 1.5$ with no vertical asymptotes.
 - C. Vertical Asymptote of $x = 1.0$ and hole at $x = 1.5$
 - D. Vertical Asymptotes of $x = 1.25$ and $x = 1.5$ with no holes.
 - E. Vertical Asymptote of $x = 1.25$ and hole at $x = 1.5$
-

2. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{6x^3 + 43x^2 + 91x + 60}{4x^2 + 16x + 15}$$

- A. Vertical Asymptotes of $x = -2.5$ and $x = -1.5$ with no holes.
 - B. Holes at $x = -2.5$ and $x = -1.5$ with no vertical asymptotes.
 - C. Vertical Asymptote of $x = -2.5$ and hole at $x = -1.5$
 - D. Vertical Asymptotes of $x = -2.5$ and $x = -1.667$ with a hole at $x = -1.5$
 - E. Vertical Asymptote of $x = 1.5$ and hole at $x = -1.5$
-

3. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{12x^3 + 32x^2 + x - 30}{30x^3 - 68x^2 - 71x + 30}$$

- A. Horizontal Asymptote of $y = 0.400$
- B. Vertical Asymptote of $y = -2$
- C. Vertical Asymptote of $y = 0.600$

- D. None of the above
 - E. Horizontal Asymptote of $y = 0$
-

4. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{12x^3 - 29x^2 - 33x + 36}{9x^2 - 3x - 20}$$

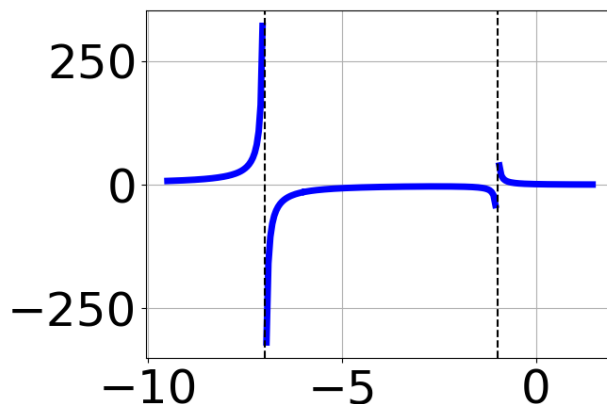
- A. Vertical Asymptote of $x = 1.333$ and hole at $x = -1.333$
 - B. Vertical Asymptotes of $x = 1.667$ and $x = 0.75$ with a hole at $x = -1.333$
 - C. Holes at $x = 1.667$ and $x = -1.333$ with no vertical asymptotes.
 - D. Vertical Asymptotes of $x = 1.667$ and $x = -1.333$ with no holes.
 - E. Vertical Asymptote of $x = 1.667$ and hole at $x = -1.333$
-

5. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{12x^3 + x^2 - 80x + 75}{12x^2 - 5x - 25}$$

- A. Holes at $x = -1.25$ and $x = 1.667$ with no vertical asymptotes.
 - B. Vertical Asymptote of $x = 1.0$ and hole at $x = 1.667$
 - C. Vertical Asymptotes of $x = -1.25$ and $x = 1.25$ with a hole at $x = 1.667$
 - D. Vertical Asymptotes of $x = -1.25$ and $x = 1.667$ with no holes.
 - E. Vertical Asymptote of $x = -1.25$ and hole at $x = 1.667$
-

6. Which of the following functions *could* be the graph below?



- A. $f(x) = \frac{x^3 - 1x^2 - 25x + 25}{x^3 + 14x^2 + 55x + 42}$
- B. $f(x) = \frac{x^3 - 31x - 30}{x^3 - 14x^2 + 55x - 42}$
- C. $f(x) = \frac{x^3 - 31x + 30}{x^3 + 14x^2 + 55x + 42}$
- D. $f(x) = \frac{x^3 - 31x - 30}{x^3 - 14x^2 + 55x - 42}$
- E. None of the above are possible equations for the graph.

7. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{9x^3 + 18x^2 - 25x - 50}{3x^2 - 14x + 15}$$

- A. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 3x + 20$
- B. Horizontal Asymptote at $y = 3.0$
- C. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 3x + 20$
- D. Horizontal Asymptote of $y = 3.0$
- E. Oblique Asymptote of $y = 3x + 20$.

8. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{4x^2 + 19x + 12}{16x^3 + 96x^2 + 143x + 60}$$

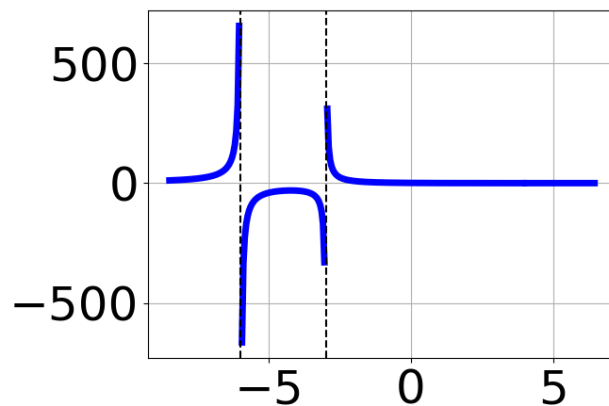
- A. Horizontal Asymptote of $y = 0$
 - B. Horizontal Asymptote at $y = -4.000$
 - C. Oblique Asymptote of $y = 4x + 5$.
 - D. Horizontal Asymptote of $y = 0.250$
 - E. Horizontal Asymptote of $y = 0.250$ and Oblique Asymptote of $y = 4x + 5$
-

9. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{12x^3 + 61x^2 + 87x + 36}{3x^2 - 5x - 12}$$

- A. Horizontal Asymptote at $y = 3.0$
 - B. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 4x + 27$
 - C. Horizontal Asymptote of $y = 4.0$ and Oblique Asymptote of $y = 4x + 27$
 - D. Horizontal Asymptote of $y = 4.0$
 - E. Oblique Asymptote of $y = 4x + 27$.
-

10. Which of the following functions *could* be the graph below?



- A. $f(x) = \frac{x^3 - 12x^2 + 47x - 60}{x^3 + 5x^2 - 18x - 72}$
- B. $f(x) = \frac{x^3 + 12x^2 + 47x + 60}{x^3 - 5x^2 - 18x + 72}$
- C. $f(x) = \frac{x^3 - 13x^2 + 55x - 75}{x^3 + 5x^2 - 18x - 72}$
- D. $f(x) = \frac{x^3 + 12x^2 + 47x + 60}{x^3 - 5x^2 - 18x + 72}$
- E. None of the above are possible equations for the graph.
-