

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

$$f(x) = \frac{6x^3 - 23x^2 - 10x + 75}{3x^2 + 17x + 20}$$

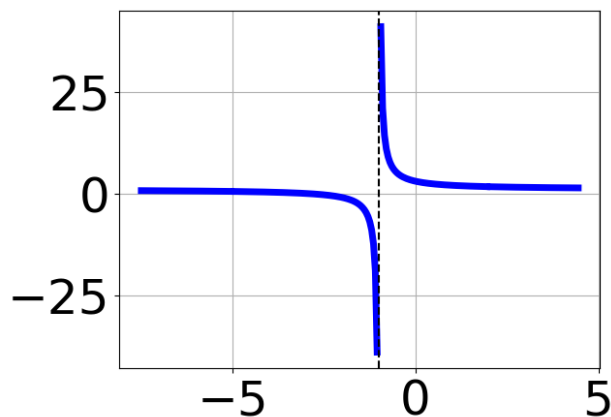
- A. Oblique Asymptote of $y = 2x - 19$.
 - B. Horizontal Asymptote of $y = -4.0$ and Oblique Asymptote of $y = 2x - 19$
 - C. Horizontal Asymptote at $y = -4.0$
 - D. Horizontal Asymptote of $y = 2.0$ and Oblique Asymptote of $y = 2x - 19$
 - E. Horizontal Asymptote of $y = 2.0$
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2. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{16x^3 - 40x^2 - 39x + 45}{4x^2 + 21x + 20}$$

- A. Horizontal Asymptote of $y = 4.0$ and Oblique Asymptote of $y = 4x - 31$
 - B. Horizontal Asymptote of $y = 4.0$
 - C. Horizontal Asymptote of $y = -4.0$ and Oblique Asymptote of $y = 4x - 31$
 - D. Horizontal Asymptote at $y = -4.0$
 - E. Oblique Asymptote of $y = 4x - 31$.
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3. Which of the following functions *could* be the graph below?



A. $f(x) = \frac{x^3 + 2x^2 - 15x - 36}{x^3 + 4x^2 - 7x - 10}$

B. $f(x) = \frac{x^3 - 6x^2 - x + 30}{x^3 - 4x^2 - 7x + 10}$

C. $f(x) = \frac{x^3 + 6x^2 - x - 30}{x^3 + 4x^2 - 7x - 10}$

D. $f(x) = \frac{x^3 - 6x^2 - x + 30}{x^3 - 4x^2 - 7x + 10}$

E. None of the above are possible equations for the graph.

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

$$f(x) = \frac{12x^3 + 37x^2 - 17x - 60}{6x^2 + 17x + 12}$$

- A. Vertical Asymptotes of $x = -1.5$ and $x = -1.333$ with no holes.
- B. Holes at $x = -1.5$ and $x = -1.333$ with no vertical asymptotes.
- C. Vertical Asymptote of $x = 2.0$ and hole at $x = -1.333$
- D. Vertical Asymptotes of $x = -1.5$ and $x = 1.25$ with a hole at $x = -1.333$
- E. Vertical Asymptote of $x = -1.5$ and hole at $x = -1.333$

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

$$f(x) = \frac{-12x^3 + 31x^2 - 18x - 45}{9x^3 - 36x^2 + 17x + 30}$$

- A. Vertical Asymptote of $y = -0.750$
 - B. None of the above
 - C. Horizontal Asymptote of $y = 0$
 - D. Vertical Asymptote of $y = 3$
 - E. Horizontal Asymptote of $y = -0.750$
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6. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{16x^3 - 64x^2 + 79x - 30}{8x^2 - 22x + 15}$$

- A. Vertical Asymptotes of $x = 1.5$ and $x = 0.75$ with a hole at $x = 1.25$
 - B. Vertical Asymptote of $x = 1.5$ and hole at $x = 1.25$
 - C. Vertical Asymptotes of $x = 1.5$ and $x = 1.25$ with no holes.
 - D. Holes at $x = 1.5$ and $x = 1.25$ with no vertical asymptotes.
 - E. Vertical Asymptote of $x = 2.0$ and hole at $x = 1.25$
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7. Determine the horizontal and/or oblique asymptotes in the rational function below.

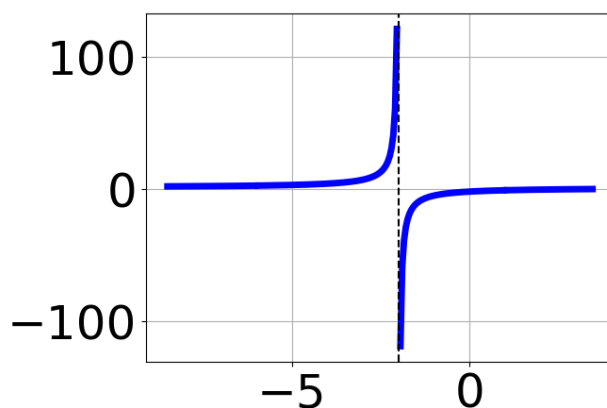
$$f(x) = \frac{2x^2 + 3x - 20}{8x^3 + 6x^2 - 45x - 50}$$

- A. Horizontal Asymptote of $y = 4.000$ and Oblique Asymptote of $y = 4x - 3$
- B. Horizontal Asymptote of $y = 4.000$
- C. Horizontal Asymptote at $y = -4.000$

D. Oblique Asymptote of $y = 4x - 3$.

E. Horizontal Asymptote of $y = 0$

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



A. $f(x) = \frac{x^3 - 4x^2 - 9x + 36}{x^3 + 7x^2 + 4x - 12}$

B. $f(x) = \frac{x^3 - 1x^2 - 26x - 24}{x^3 - 7x^2 + 4x + 12}$

C. $f(x) = \frac{x^3 + x^2 - 26x + 24}{x^3 + 7x^2 + 4x - 12}$

D. $f(x) = \frac{x^3 - 1x^2 - 26x - 24}{x^3 - 7x^2 + 4x + 12}$

E. None of the above are possible equations for the graph.

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

$$f(x) = \frac{6x^3 + 23x^2 + 9x - 18}{4x^2 - 4x - 15}$$

A. Vertical Asymptote of $x = 2.5$ and hole at $x = -1.5$

B. Vertical Asymptotes of $x = 2.5$ and $x = -1.5$ with no holes.

C. Vertical Asymptotes of $x = 2.5$ and $x = 0.667$ with a hole at $x = -1.5$

- D. Holes at $x = 2.5$ and $x = -1.5$ with no vertical asymptotes.
 - E. Vertical Asymptote of $x = 1.5$ and hole at $x = -1.5$
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10. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{12x^3 + 73x^2 + 112x + 48}{6x^2 + 17x + 12}$$

- A. Vertical Asymptote of $x = 2.0$ and hole at $x = -1.333$
 - B. Holes at $x = -1.5$ and $x = -1.333$ with no vertical asymptotes.
 - C. Vertical Asymptotes of $x = -1.5$ and $x = -1.333$ with no holes.
 - D. Vertical Asymptote of $x = -1.5$ and hole at $x = -1.333$
 - E. Vertical Asymptotes of $x = -1.5$ and $x = -0.75$ with a hole at $x = -1.333$
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