

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

$$f(x) = \frac{16x^3 - 49x + 30}{8x^2 + 2x - 15}$$

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

$$f(x) = \frac{12x^3 - 19x^2 - 45x - 18}{6x^2 - 11x - 10}$$

- A. Vertical Asymptotes of $x = 2.5$ and $x = -0.667$ with no holes.
 - B. Vertical Asymptote of $x = 2.5$ and hole at $x = -0.667$
 - C. Vertical Asymptote of $x = 2.0$ and hole at $x = -0.667$
 - D. Holes at $x = 2.5$ and $x = -0.667$ with no vertical asymptotes.
 - E. Vertical Asymptotes of $x = 2.5$ and $x = -0.75$ with a hole at $x = -0.667$
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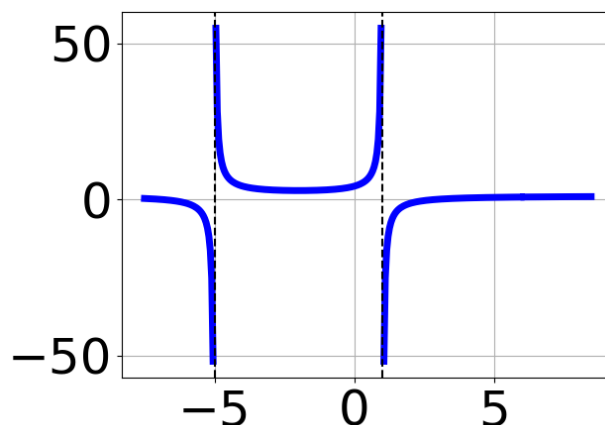
3. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{3x^2 - 20x + 25}{18x^3 - 51x^2 + 5x + 50}$$

- A. Oblique Asymptote of $y = 6x + 23$.
- B. Horizontal Asymptote of $y = 0.167$
- C. Horizontal Asymptote at $y = 5.000$
- D. Horizontal Asymptote of $y = 0$

- E. Horizontal Asymptote of $y = 0.167$ and Oblique Asymptote of $y = 6x + 23$

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



- A. $f(x) = \frac{x^3 + 5x^2 - 17x - 21}{x^3 - 2x^2 - 29x + 30}$
- B. $f(x) = \frac{x^3 + 2x^2 - 45x - 126}{x^3 + 2x^2 - 29x - 30}$
- C. $f(x) = \frac{x^3 + 2x^2 - 45x - 126}{x^3 + 2x^2 - 29x - 30}$
- D. $f(x) = \frac{x^3 - 2x^2 - 45x + 126}{x^3 - 2x^2 - 29x + 30}$
- E. None of the above are possible equations for the graph.

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

$$f(x) = \frac{12x^3 - 71x^2 + 130x - 75}{3x^2 - 17x + 20}$$

- A. Oblique Asymptote of $y = 4x - 1$.
- B. Horizontal Asymptote of $y = 4.0$ and Oblique Asymptote of $y = 4x - 1$
- C. Horizontal Asymptote at $y = 4.0$

- D. Horizontal Asymptote of $y = 4.0$
 - E. Horizontal Asymptote of $y = 4.0$ and Oblique Asymptote of $y = 4x - 1$
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6. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{2x^2 + 13x + 20}{8x^3 + 6x^2 - 65x - 75}$$

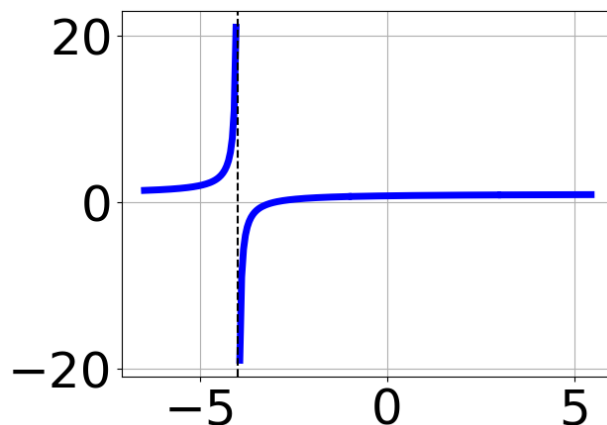
- A. Oblique Asymptote of $y = 4x - 23$.
 - B. Horizontal Asymptote of $y = 0$
 - C. Horizontal Asymptote at $y = -4.000$
 - D. Horizontal Asymptote of $y = 0.250$ and Oblique Asymptote of $y = 4x - 23$
 - E. Horizontal Asymptote of $y = 0.250$
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7. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{4x^3 - 12x^2 - 31x + 60}{6x^2 - x - 12}$$

- A. Vertical Asymptotes of $x = -1.333$ and $x = -2.5$ with a hole at $x = 1.5$
 - B. Holes at $x = -1.333$ and $x = 1.5$ with no vertical asymptotes.
 - C. Vertical Asymptote of $x = 0.667$ and hole at $x = 1.5$
 - D. Vertical Asymptotes of $x = -1.333$ and $x = 1.5$ with no holes.
 - E. Vertical Asymptote of $x = -1.333$ and hole at $x = 1.5$
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8. Which of the following functions *could* be the graph below?



- A. $f(x) = \frac{x^3 - 1x^2 - 9x + 9}{x^3 - 2x^2 - 11x + 12}$
- B. $f(x) = \frac{x^3 + x^2 - 9x - 9}{x^3 + 2x^2 - 11x - 12}$
- C. $f(x) = \frac{x^3 + 13x^2 + 51x + 63}{x^3 + 2x^2 - 11x - 12}$
- D. $f(x) = \frac{x^3 - 1x^2 - 9x + 9}{x^3 - 2x^2 - 11x + 12}$
- E. None of the above are possible equations for the graph.

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

$$f(x) = \frac{16x^3 - 32x^2 - 113x - 60}{4x^2 - 17x - 15}$$

- A. Horizontal Asymptote of $y = 5.0$ and Oblique Asymptote of $y = 4x + 9$
- B. Horizontal Asymptote of $y = 4.0$
- C. Horizontal Asymptote at $y = 5.0$
- D. Horizontal Asymptote of $y = 4.0$ and Oblique Asymptote of $y = 4x + 9$
- E. Oblique Asymptote of $y = 4x + 9$.

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

$$f(x) = \frac{6x^3 - 35x^2 + 66x - 40}{8x^2 - 30x + 25}$$

- A. Holes at $x = 1.25$ and $x = 2.5$ with no vertical asymptotes.
 - B. Vertical Asymptote of $x = 0.75$ and hole at $x = 2.5$
 - C. Vertical Asymptote of $x = 1.25$ and hole at $x = 2.5$
 - D. Vertical Asymptotes of $x = 1.25$ and $x = 2.5$ with no holes.
 - E. Vertical Asymptotes of $x = 1.25$ and $x = 1.333$ with a hole at $x = 2.5$
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