

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

$$f(x) = \frac{8x^3 - 30x^2 + 13x + 30}{4x^2 - 5x - 6}$$

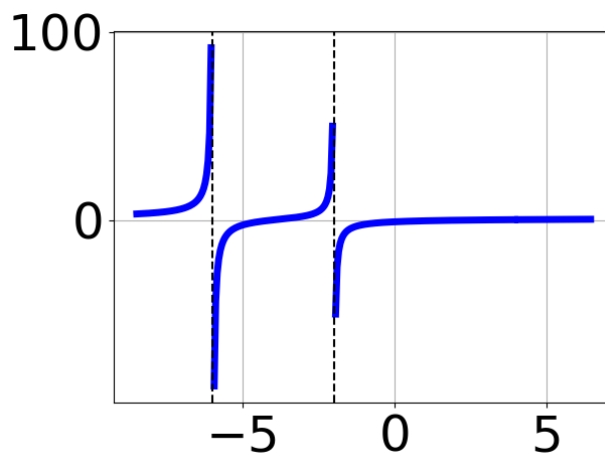
- A. Horizontal Asymptote of $y = 2.0$ and Oblique Asymptote of $y = 2x - 5$
 - B. Horizontal Asymptote of $y = 2.0$ and Oblique Asymptote of $y = 2x - 5$
 - C. Horizontal Asymptote of $y = 2.0$
 - D. Oblique Asymptote of $y = 2x - 5$.
 - E. Horizontal Asymptote at $y = 2.0$
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2. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{8x^3 - 46x^2 + 41x + 60}{4x^3 + 22x^2 - 64x - 48}$$

- A. Horizontal Asymptote of $y = 0$
 - B. Vertical Asymptote of $y = -4.000$
 - C. None of the above
 - D. Horizontal Asymptote of $y = 2.000$
 - E. Vertical Asymptote of $y = 4$
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3. Which of the following functions *could* be the graph below?



- A. $f(x) = \frac{x^3 + 6x^2 - 7x - 60}{x^3 + 4x^2 - 20x - 48}$
- B. $f(x) = \frac{x^3 - 3x^2 - 16x + 48}{x^3 + 4x^2 - 20x - 48}$
- C. $f(x) = \frac{x^3 + 3x^2 - 16x - 48}{x^3 - 4x^2 - 20x + 48}$
- D. $f(x) = \frac{x^3 + 3x^2 - 16x - 48}{x^3 - 4x^2 - 20x + 48}$
- E. None of the above are possible equations for the graph.

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

$$f(x) = \frac{12x^3 - 41x^2 + 44x - 15}{3x^2 - 11x + 10}$$

- A. Horizontal Asymptote of $y = 4.0$
- B. Horizontal Asymptote at $y = 2.0$
- C. Horizontal Asymptote of $y = 4.0$ and Oblique Asymptote of $y = 4x + 1$
- D. Oblique Asymptote of $y = 4x + 1$.
- E. Horizontal Asymptote of $y = 2.0$ and Oblique Asymptote of $y = 4x + 1$

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

$$f(x) = \frac{6x^3 + 31x^2 + 8x - 80}{9x^2 - 16}$$

- A. Vertical Asymptote of $x = -1.333$ and hole at $x = 1.333$
- B. Vertical Asymptote of $x = 0.667$ and hole at $x = 1.333$
- C. Holes at $x = -1.333$ and $x = 1.333$ with no vertical asymptotes.
- D. Vertical Asymptotes of $x = -1.333$ and $x = 1.333$ with no holes.
- E. Vertical Asymptotes of $x = -1.333$ and $x = -2.5$ with a hole at $x = 1.333$

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

$$f(x) = \frac{4x^3 - 28x^2 + 63x - 45}{6x^2 - 11x - 10}$$

- A. Vertical Asymptotes of $x = -0.667$ and $x = 2.5$ with no holes.
- B. Vertical Asymptote of $x = -0.667$ and hole at $x = 2.5$
- C. Holes at $x = -0.667$ and $x = 2.5$ with no vertical asymptotes.
- D. Vertical Asymptotes of $x = -0.667$ and $x = 1.5$ with a hole at $x = 2.5$
- E. Vertical Asymptote of $x = 0.667$ and hole at $x = 2.5$

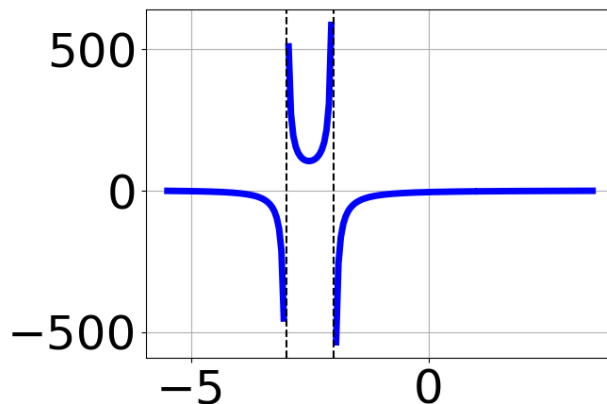
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7. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{2x^2 + 7x - 15}{12x^3 + 20x^2 - 97x + 60}$$

- A. Oblique Asymptote of $y = 6x - 11$.
- B. Horizontal Asymptote of $y = 0.167$ and Oblique Asymptote of $y = 6x - 11$

- C. Horizontal Asymptote of $y = 0.167$
- D. Horizontal Asymptote at $y = -5.000$
- E. Horizontal Asymptote of $y = 0$

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



- A. $f(x) = \frac{x^3 - 31x + 30}{x^3 + 4x^2 + x - 6}$
- B. $f(x) = \frac{x^3 - 31x - 30}{x^3 - 4x^2 + x + 6}$
- C. $f(x) = \frac{x^3 - 4x^2 - 35x + 150}{x^3 + 4x^2 + x - 6}$
- D. $f(x) = \frac{x^3 - 31x - 30}{x^3 - 4x^2 + x + 6}$
- E. None of the above are possible equations for the graph.

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

$$f(x) = \frac{9x^3 - 15x^2 - 2x + 8}{9x^2 - 9x - 10}$$

- A. Holes at $x = 1.667$ and $x = -0.667$ with no vertical asymptotes.
- B. Vertical Asymptote of $x = 1.0$ and hole at $x = -0.667$
- C. Vertical Asymptotes of $x = 1.667$ and $x = -0.667$ with no holes.

- D. Vertical Asymptote of $x = 1.667$ and hole at $x = -0.667$
 - E. Vertical Asymptotes of $x = 1.667$ and $x = 1.333$ with a hole at $x = -0.667$
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10. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{8x^3 + 34x^2 + 45x + 18}{4x^2 - 9}$$

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