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

$$f(x) = \frac{12x^3 - 19x^2 - 101x - 60}{4x^2 + 15x + 9}$$
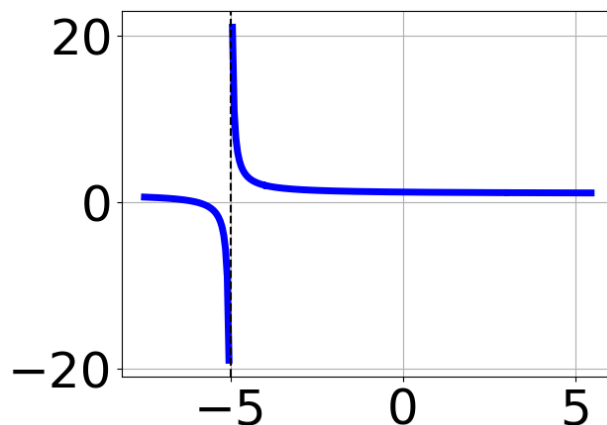
  A. Horizontal Asymptote at $y = -3.0$

  B. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 3x - 16$

  C. Oblique Asymptote of $y = 3x - 16$.

  D. Horizontal Asymptote of $y = 3.0$

  E. Horizontal Asymptote of $y = -3.0$ and Oblique Asymptote of $y = 3x - 16$

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

$$f(x) = \frac{8x^3 - 6x^2 - 29x + 30}{6x^2 - x - 12}$$

  A. Vertical Asymptote of $x = -1.333$ and hole at $x = 1.5$

  B. Vertical Asymptote of $x = 1.333$ and hole at $x = 1.5$

  C. Vertical Asymptotes of $x = -1.333$ and $x = 1.5$ with no holes.

  D. Holes at $x = -1.333$ and $x = 1.5$ with no vertical asymptotes.

  E. Vertical Asymptotes of $x = -1.333$ and $x = 1.25$ with a hole at $x = 1.5$

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

A. $f(x) = \dfrac{x^3 - 7x^2 - 6x + 72}{x^3 - 6x^2 - 7x + 60}$

B. $f(x) = \dfrac{x^3 - 1x^2 - 32x + 60}{x^3 + 6x^2 - 7x - 60}$

C. $f(x) = \dfrac{x^3 - 7x^2 - 6x + 72}{x^3 - 6x^2 - 7x + 60}$

D. $f(x) = \dfrac{x^3 + 7x^2 - 6x - 72}{x^3 + 6x^2 - 7x - 60}$

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

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4. Determine the horizontal and/or oblique asymptotes in the rational function below.
$$f(x) = \frac{6x^3 + 7x^2 - 14x - 15}{3x^2 - 7x - 20}$$

A. Horizontal Asymptote at $y = 4.0$

B. Horizontal Asymptote of $y = 2.0$

C. Horizontal Asymptote of $y = 4.0$ and Oblique Asymptote of $y = 2x + 7$

D. Horizontal Asymptote of $y = 2.0$ and Oblique Asymptote of $y = 2x + 7$

E. Oblique Asymptote of $y = 2x + 7$.

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

$$f(x) = \frac{8x^3 - 14x^2 - 55x + 75}{12x^2 - 35x + 25}$$

A. Holes at $x = 1.667$ and $x = 1.25$ with no vertical asymptotes.

B. Vertical Asymptotes of $x = 1.667$ and $x = -2.5$ with a hole at $x = 1.25$

C. Vertical Asymptote of $x = 0.667$ and hole at $x = 1.25$

D. Vertical Asymptote of $x = 1.667$ and hole at $x = 1.25$

E. Vertical Asymptotes of $x = 1.667$ and $x = 1.25$ with no holes.

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

$$f(x) = \frac{2x^2 + 15x + 25}{10x^3 + 9x^2 - 34x + 15}$$

A. Horizontal Asymptote of $y = 0.200$

B. Oblique Asymptote of $y = 5x - 33$.

C. Horizontal Asymptote at $y = -5.000$

D. Horizontal Asymptote of $y = 0$

E. Horizontal Asymptote of $y = 0.200$ and Oblique Asymptote of $y = 5x - 33$

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

$$f(x) = \frac{9x^3 - 63x^2 + 128x - 80}{9x^2 - 21x + 10}$$

A. Vertical Asymptotes of $x = 0.667$ and $x = 1.667$ with no holes.

B. Vertical Asymptote of $x = 0.667$ and hole at $x = 1.667$

C. Holes at $x = 0.667$ and $x = 1.667$ with no vertical asymptotes.

    D. Vertical Asymptotes of $x = 0.667$ and $x = 1.333$ with a hole at $x = 1.667$

    E. Vertical Asymptote of $x = 1.0$ and hole at $x = 1.667$

8. Determine the vertical asymptotes and holes in the rational function below.
$$f(x) = \frac{9x^3 - 18x^2 - 4x + 8}{12x^2 - 7x - 10}$$

    A. Vertical Asymptotes of $x = 1.25$ and $x = 0.667$ with a hole at $x = -0.667$

    B. Vertical Asymptotes of $x = 1.25$ and $x = -0.667$ with no holes.

    C. Holes at $x = 1.25$ and $x = -0.667$ with no vertical asymptotes.

    D. Vertical Asymptote of $x = 0.75$ and hole at $x = -0.667$

    E. Vertical Asymptote of $x = 1.25$ and hole at $x = -0.667$

9. Which of the following functions *could* be the graph below?
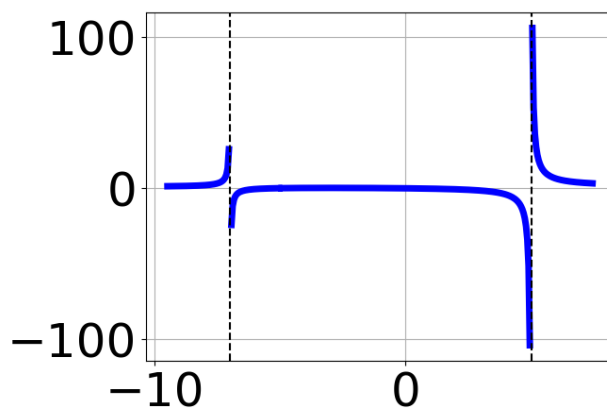
    A. $f(x) = \dfrac{x^3 + 12x^2 + 44x + 48}{x^3 + 7x^2 - 25x - 175}$

    B. $f(x) = \dfrac{x^3 + 11x^2 + 38x + 40}{x^3 + 7x^2 - 25x - 175}$

    C. $f(x) = \dfrac{x^3 - 11x^2 + 38x - 40}{x^3 - 7x^2 - 25x + 175}$

D. $f(x) = \dfrac{x^3 - 11x^2 + 38x - 40}{x^3 - 7x^2 - 25x + 175}$

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

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

$$f(x) = \frac{12x^3 + 37x^2 - 59x - 60}{4x^3 - 10x^2 - 64x - 48}$$

A. Vertical Asymptote of $y = 4.000$

B. Horizontal Asymptote of $y = 3.000$

C. Horizontal Asymptote of $y = 0$

D. Vertical Asymptote of $y = -4$

E. None of the above