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

$$f(x) = \frac{6x^3 + 23x^2 + 9x - 18}{2x^2 + 9x + 9}$$
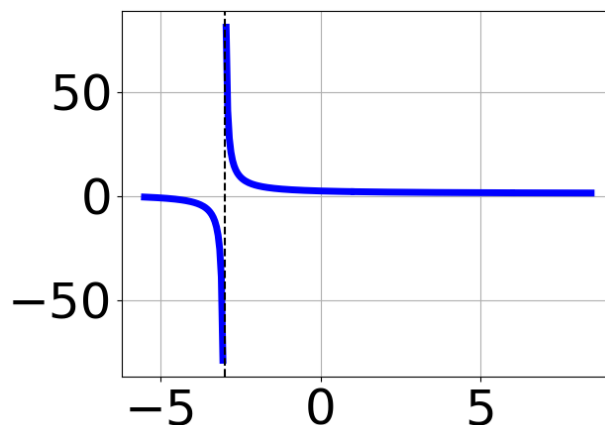
  A. Oblique Asymptote of $y = 3x - 2$.

  B. Horizontal Asymptote of $y = 3.0$

  C. Horizontal Asymptote at $y = -3.0$

  D. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 3x - 2$

  E. Horizontal Asymptote of $y = -3.0$ and Oblique Asymptote of $y = 3x - 2$

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

$$f(x) = \frac{6x^3 - 5x^2 - 61x - 60}{8x^2 + 2x - 15}$$

  A. Vertical Asymptote of $x = 1.25$ and hole at $x = -1.5$

  B. Vertical Asymptotes of $x = 1.25$ and $x = -1.5$ with no holes.

  C. Vertical Asymptotes of $x = 1.25$ and $x = -1.667$ with a hole at $x = -1.5$

  D. Holes at $x = 1.25$ and $x = -1.5$ with no vertical asymptotes.

  E. Vertical Asymptote of $x = 0.75$ and hole at $x = -1.5$

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

A. $f(x) = \dfrac{x^3 - 43x + 42}{x^3 - 4x^2 - 15x + 18}$

B. $f(x) = \dfrac{x^3 + x^2 - 34x + 56}{x^3 - 4x^2 - 15x + 18}$

C. $f(x) = \dfrac{x^3 - 43x - 42}{x^3 + 4x^2 - 15x - 18}$

D. $f(x) = \dfrac{x^3 - 43x - 42}{x^3 + 4x^2 - 15x - 18}$

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

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

$$f(x) = \frac{12x^3 - 17x^2 - 104x - 80}{3x^2 - 8x - 16}$$

A. Horizontal Asymptote of $y = 4.0$ and Oblique Asymptote of $y = 4x + 5$

B. Horizontal Asymptote of $y = 4.0$

C. Oblique Asymptote of $y = 4x + 5$.

D. Horizontal Asymptote at $y = 4.0$

E. Horizontal Asymptote of $y = 4.0$ and Oblique Asymptote of $y = 4x + 5$

5. Determine the vertical asymptotes and holes in the rational function below.
$$f(x) = \frac{12x^3 + 41x^2 - 38x - 40}{9x^2 + 21x + 10}$$

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

B. Vertical Asymptotes of $x = -1.667$ and $x = 1.25$ with a hole at $x = -0.667$

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

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

E. Vertical Asymptote of $x = 1.333$ and hole at $x = -0.667$

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

$$f(x) = \frac{20x^3 - 13x^2 - 23x + 10}{-20x^3 + 66x^2 + 21x - 20}$$

A. Horizontal Asymptote of $y = 0$

B. None of the above

C. Vertical Asymptote of $y = -1$

D. Vertical Asymptote of $y = 0.800$

E. Horizontal Asymptote of $y = -1.000$

7. Determine the vertical asymptotes and holes in the rational function below.
$$f(x) = \frac{9x^3 + 54x^2 + 80x + 32}{9x^2 - 16}$$

A. Vertical Asymptote of $x = 1.0$ and hole at $x = -1.333$

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

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

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

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

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

$$f(x) = \frac{12x^3 + 37x^2 - 59x - 60}{6x^2 - 19x + 15}$$

    A. Holes at $x = 1.5$ and $x = 1.667$ with no vertical asymptotes.

    B. Vertical Asymptotes of $x = 1.5$ and $x = -0.75$ with a hole at $x = 1.667$

    C. Vertical Asymptote of $x = 2.0$ and hole at $x = 1.667$

    D. Vertical Asymptotes of $x = 1.5$ and $x = 1.667$ with no holes.

    E. Vertical Asymptote of $x = 1.5$ and hole at $x = 1.667$

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9. Which of the following functions *could* be the graph below?
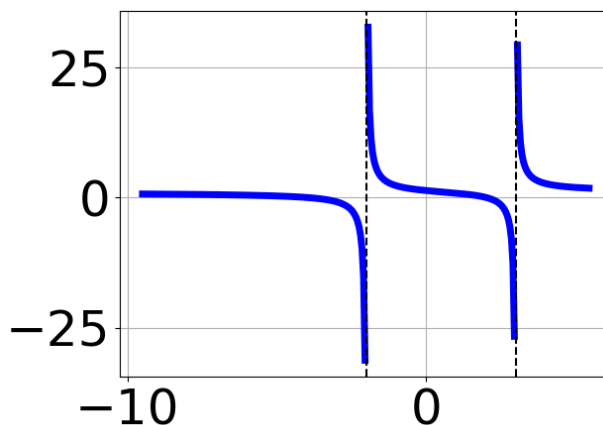
    A. $f(x) = \dfrac{x^3 - 9x^2 + 6x + 56}{x^3 - 6x^2 - 13x + 42}$

    B. $f(x) = \dfrac{x^3 - 2x^2 - 16x + 32}{x^3 + 6x^2 - 13x - 42}$

    C. $f(x) = \dfrac{x^3 - 9x^2 + 6x + 56}{x^3 - 6x^2 - 13x + 42}$

    D. $f(x) = \dfrac{x^3 + 9x^2 + 6x - 56}{x^3 + 6x^2 - 13x - 42}$

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

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

$$f(x) = \frac{18x^3 + 81x^2 + 16x - 80}{12x^3 - 50x^2 - 135x + 100}$$

A. None of the above

B. Vertical Asymptote of $y = 2.500$

C. Vertical Asymptote of $y = -4$

D. Horizontal Asymptote of $y = 1.500$

E. Horizontal Asymptote of $y = 0$