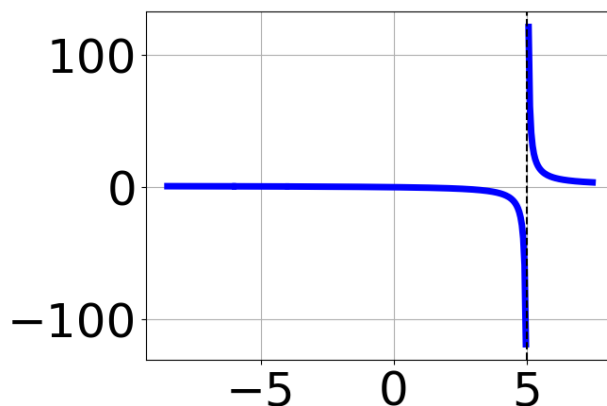1. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{12x^3 + 43x^2 + 51x + 20}{4x^2 + 25x + 25}$$

A. Horizontal Asymptote of $y = 3.000$

B. Horizontal Asymptote of $y = 3.000$ and Oblique Asymptote of $y = 3x - 8$

C. Horizontal Asymptote at $y = -5.000$

D. Oblique Asymptote of $y = 3x - 8$.

E. Horizontal Asymptote of $y = 0$

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

A. $f(x) = \dfrac{x^3 - 2x^2 - 7x - 4}{x^3 + 5x^2 - 26x - 120}$

B. $f(x) = \dfrac{x^3 - 11x^2 + 34x - 24}{x^3 - 5x^2 - 26x + 120}$

C. $f(x) = \dfrac{x^3 + 11x^2 + 34x + 24}{x^3 + 5x^2 - 26x - 120}$

D. $f(x) = \dfrac{x^3 - 11x^2 + 34x - 24}{x^3 - 5x^2 - 26x + 120}$

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

3. Determine the vertical asymptotes and holes in the rational function below.
$$f(x) = \frac{12x^3 + 41x^2 - 10x - 75}{12x^2 + 29x + 15}$$

A. Holes at $x = -0.75$ and $x = -1.667$ with no vertical asymptotes.

B. Vertical Asymptote of $x = -0.75$ and hole at $x = -1.667$

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

D. Vertical Asymptotes of $x = -0.75$ and $x = -1.667$ with no holes.

E. Vertical Asymptotes of $x = -0.75$ and $x = 1.25$ with a hole at $x = -1.667$

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4. Determine the vertical asymptotes and holes in the rational function below.
$$f(x) = \frac{12x^3 - 41x^2 - 40x + 48}{9x^2 + 18x + 8}$$

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

B. Vertical Asymptotes of $x = -0.667$ and $x = 0.75$ with a hole at $x = -1.333$

C. Vertical Asymptotes of $x = -0.667$ and $x = -1.333$ with no holes.

D. Holes at $x = -0.667$ and $x = -1.333$ with no vertical asymptotes.

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

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

$$f(x) = \frac{16x^3 + 48x^2 - 25x - 75}{4x^2 - 17x + 15}$$

A. Horizontal Asymptote of $y = 4.0$

B. Horizontal Asymptote of $y = 4.0$ and Oblique Asymptote of $y = 4x + 29$

C. Horizontal Asymptote at $y = 3.0$

D. Oblique Asymptote of $y = 4x + 29$.

E. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 4x + 29$

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6. Determine the horizontal and/or oblique asymptotes in the rational function below.
$$f(x) = \frac{9x^3 - 48x^2 + 73x - 30}{3x^2 - 17x + 10}$$

A. Horizontal Asymptote of $y = 3.0$

B. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 3x + 1$

C. Horizontal Asymptote of $y = 5.0$ and Oblique Asymptote of $y = 3x + 1$

D. Oblique Asymptote of $y = 3x + 1$.

E. Horizontal Asymptote at $y = 5.0$

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7. Which of the following functions *could* be the graph below?
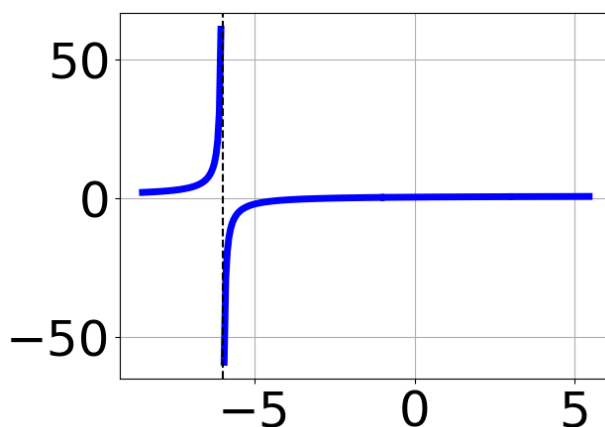
A. $f(x) = \dfrac{x^3 - 3x^2 - 13x + 15}{x^3 + 4x^2 - 15x - 18}$

B. $f(x) = \dfrac{x^3 - 1x^2 - 9x + 9}{x^3 - 4x^2 - 15x + 18}$

C. $f(x) = \dfrac{x^3 + x^2 - 9x - 9}{x^3 + 4x^2 - 15x - 18}$

D. $f(x) = \dfrac{x^3 - 1x^2 - 9x + 9}{x^3 - 4x^2 - 15x + 18}$

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

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

$$f(x) = \frac{6x^3 - 11x^2 - x + 6}{4x^2 - 16x + 15}$$

A. Holes at $x = 2.5$ and $x = 1.5$ with no vertical asymptotes.

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

C. Vertical Asymptote of $x = 1.5$ and hole at $x = 1.5$

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

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

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

$$f(x) = \frac{6x^3 + x^2 - 39x + 36}{9x^2 - 18x + 8}$$

A. Vertical Asymptotes of $x = 0.667$ and $x = 1.5$ with a hole at $x = 1.333$

B. Holes at $x = 0.667$ and $x = 1.333$ with no vertical asymptotes.

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

D. Vertical Asymptotes of $x = 0.667$ and $x = 1.333$ with no holes.

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

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

$$f(x) = \frac{10x^3 + 39x^2 + 44x + 12}{5x^2 - 13x - 6}$$

A. Horizontal Asymptote at $y = 3.000$

B. Horizontal Asymptote of $y = 0$

C. Horizontal Asymptote of $y = 2.000$

D. Oblique Asymptote of $y = 2x + 13$.

E. Horizontal Asymptote of $y = 2.000$ and Oblique Asymptote of $y = 2x + 13$