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

$$f(x) = \frac{8x^3 - 26x^2 - 5x + 50}{8x^2 + 22x + 15}$$

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

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

 C. Vertical Asymptotes of $x = -1.5$ and $x = 2.5$ with a hole at $x = -1.25$

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

 E. Vertical Asymptote of $x = 1.0$ and hole at $x = -1.25$

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

$$f(x) = \frac{6x^3 - 19x^2 - 45x + 100}{9x^2 - 9x - 10}$$

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

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

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

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

 E. Vertical Asymptotes of $x = -0.667$ and $x = -2.5$ with a hole at $x = 1.667$

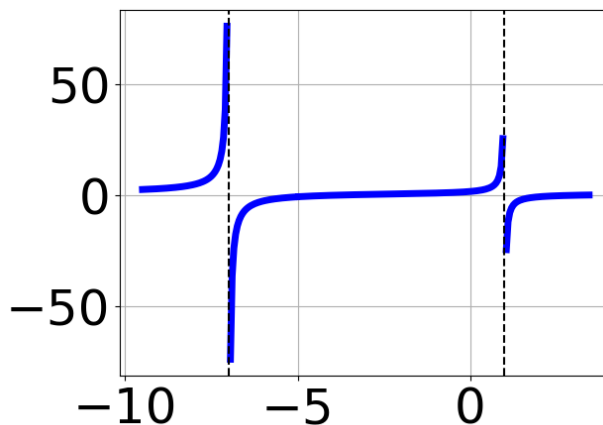3. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{3x^2 - 13x - 10}{15x^3 + 76x^2 + 68x + 16}$$

 A. Horizontal Asymptote of $y = 0.200$

 B. Horizontal Asymptote at $y = 5.000$

 C. Horizontal Asymptote of $y = 0$

    D. Oblique Asymptote of $y = 5x + 47$.

    E. Horizontal Asymptote of $y = 0.200$ and Oblique Asymptote of $y = 5x + 47$

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

    A. $f(x) = \dfrac{x^3 - 6x^2 - 7x + 60}{x^3 - 11x^2 + 23x + 35}$

    B. $f(x) = \dfrac{x^3 - 3x^2 - 16x + 48}{x^3 + 11x^2 + 23x - 35}$

    C. $f(x) = \dfrac{x^3 - 6x^2 - 7x + 60}{x^3 - 11x^2 + 23x + 35}$

    D. $f(x) = \dfrac{x^3 + 6x^2 - 7x - 60}{x^3 + 11x^2 + 23x - 35}$

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

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

$$f(x) = \frac{9x^3 - 15x^2 - 26x + 40}{3x^2 + 8x - 16}$$

    A. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 3x - 13$

B. Horizontal Asymptote of $y = -4.0$ and Oblique Asymptote of $y = 3x - 13$

C. Horizontal Asymptote of $y = 3.0$

D. Horizontal Asymptote at $y = -4.0$

E. Oblique Asymptote of $y = 3x - 13$.

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

$$f(x) = \frac{10x^3 + 19x^2 - 94x - 40}{-4x^3 + 24x^2 + 46x - 40}$$

A. None of the above

B. Vertical Asymptote of $y = 1.000$

C. Vertical Asymptote of $y = -4$

D. Horizontal Asymptote of $y = -2.500$

E. Horizontal Asymptote of $y = 0$

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

$$f(x) = \frac{12x^3 + 79x^2 + 144x + 80}{6x^2 - 7x - 20}$$

A. Vertical Asymptote of $x = 2.5$ and hole at $x = -1.333$

B. Holes at $x = 2.5$ and $x = -1.333$ with no vertical asymptotes.

C. Vertical Asymptotes of $x = 2.5$ and $x = -1.333$ with no holes.

D. Vertical Asymptote of $x = 2.0$ and hole at $x = -1.333$

E. Vertical Asymptotes of $x = 2.5$ and $x = -1.25$ with a hole at $x = -1.333$

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8. Which of the following functions *could* be the graph below?
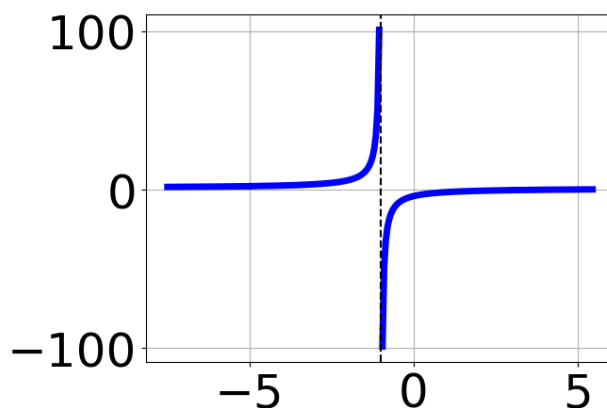
A. $f(x) = \dfrac{x^3 + 2x^2 - 23x - 60}{x^3 - 3x^2 - 13x + 15}$

B. $f(x) = \dfrac{x^3 - 2x^2 - 23x + 60}{x^3 + 3x^2 - 13x - 15}$

C. $f(x) = \dfrac{x^3 + 2x^2 - 23x - 60}{x^3 - 3x^2 - 13x + 15}$

D. $f(x) = \dfrac{x^3 - 7x^2 + 2x + 40}{x^3 + 3x^2 - 13x - 15}$

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

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

$$f(x) = \frac{12x^3 - 49x^2 - 2x + 24}{4x^2 - 23x + 15}$$

A. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 3x + 5$

B. Oblique Asymptote of $y = 3x + 5$.

C. Horizontal Asymptote of $y = 5.0$ and Oblique Asymptote of $y = 3x + 5$

D. Horizontal Asymptote at $y = 5.0$

E. Horizontal Asymptote of $y = 3.0$

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

$$f(x) = \frac{4x^3 - 12x^2 - 25x + 75}{4x^2 - 4x - 15}$$

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

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

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

  D. Vertical Asymptote of $x = 1.0$ and hole at $x = 2.5$

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