1. Determine the vertical asymptotes and holes in the rational function below.
$$f(x) = \frac{4x^3 + 8x^2 - 27x - 45}{6x^2 - 11x - 10}$$

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

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 Asymptote of $x = -0.667$ and hole at $x = 2.5$

E. Vertical Asymptotes of $x = -0.667$ and $x = 2.5$ with no holes.

2. Determine the horizontal and/or oblique asymptotes in the rational function below.
$$f(x) = \frac{10x^3 - 29x^2 + 9x + 18}{20x^3 - 1x^2 + 11x + 30}$$

A. Vertical Asymptote of $y = 2$

B. Horizontal Asymptote of $y = 0.500$

C. Horizontal Asymptote of $y = 0$

D. None of the above

E. Vertical Asymptote of $y = 1.250$

3. Determine the horizontal and/or oblique asymptotes in the rational function below.
$$f(x) = \frac{8x^3 - 22x^2 - 5x + 25}{4x^2 + 15x - 25}$$

A. Oblique Asymptote of $y = 2x - 13$.

B. Horizontal Asymptote of $y = 2.0$

C. Horizontal Asymptote of $y = 2.0$ and Oblique Asymptote of $y = 2x - 13$
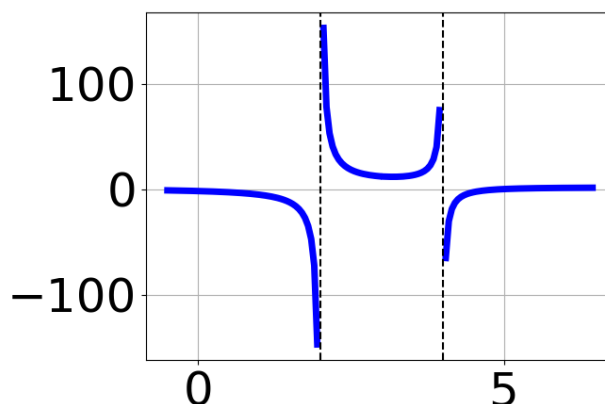
D. Horizontal Asymptote at $y = -5.0$

    E. Horizontal Asymptote of $y = -5.0$ and Oblique Asymptote of $y = 2x - 13$

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

$$f(x) = \frac{12x^3 - 29x^2 + 23x - 6}{9x^2 - 18x + 8}$$

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

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

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

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

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

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

    A. $f(x) = \dfrac{x^3 + 5x^2 - 9x - 45}{x^3 + 9x^2 + 26x + 24}$

    B. $f(x) = \dfrac{x^3 - 7x^2 - 5x + 75}{x^3 - 9x^2 + 26x - 24}$

    C. $f(x) = \dfrac{x^3 - 5x^2 - 9x + 45}{x^3 - 9x^2 + 26x - 24}$

D. $f(x) = \dfrac{x^3 + 5x^2 - 9x - 45}{x^3 + 9x^2 + 26x + 24}$

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

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6. Determine the vertical asymptotes and holes in the rational function below.
$$f(x) = \frac{16x^3 - 24x^2 - 31x + 30}{12x^2 - 25x + 12}$$

A. Vertical Asymptote of $x = 1.333$ and hole at $x = 0.75$

B. Vertical Asymptote of $x = 1.333$ and hole at $x = 0.75$

C. Holes at $x = 1.333$ and $x = 0.75$ with no vertical asymptotes.

D. Vertical Asymptotes of $x = 1.333$ and $x = 0.75$ with no holes.

E. Vertical Asymptotes of $x = 1.333$ and $x = -1.25$ with a hole at $x = 0.75$

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

$$f(x) = \frac{15x^3 - 82x^2 + 131x - 60}{-20x^3 + 12x^2 + 28x - 48}$$

A. Vertical Asymptote of $y = 3$

B. None of the above

C. Vertical Asymptote of $y = -1.000$

D. Horizontal Asymptote of $y = 0$

E. Horizontal Asymptote of $y = -0.750$

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8. Determine the horizontal and/or oblique asymptotes in the rational function below.
$$f(x) = \frac{6x^3 + x^2 - 30x - 25}{3x^2 + 20x + 25}$$

A. Horizontal Asymptote of $y = 2.0$

B. Horizontal Asymptote of $y = -5.0$ and Oblique Asymptote of $y = 2x - 13$

C. Horizontal Asymptote at $y = -5.0$

D. Horizontal Asymptote of $y = 2.0$ and Oblique Asymptote of $y = 2x - 13$

E. Oblique Asymptote of $y = 2x - 13$.

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

$$f(x) = \frac{9x^3 - 12x^2 - 20x + 16}{12x^2 + 7x - 12}$$

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

B. Vertical Asymptote of $x = 0.75$ and hole at $x = -1.333$

C. Holes at $x = 0.75$ and $x = -1.333$ with no vertical asymptotes.

D. Vertical Asymptotes of $x = 0.75$ and $x = -1.333$ with no holes.

E. Vertical Asymptote of $x = 0.75$ and hole at $x = -1.333$

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10. Which of the following functions *could* be the graph below?
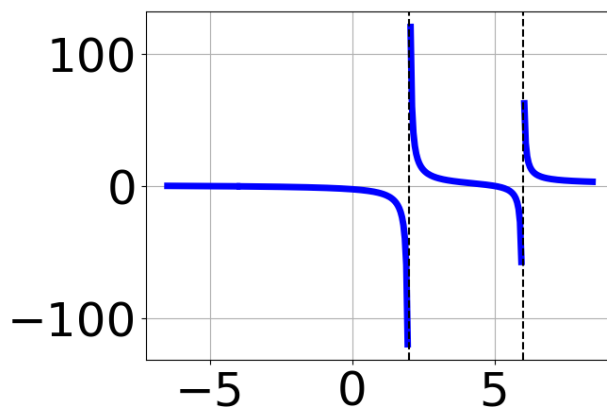
A. $f(x) = \dfrac{x^3 + 8x^2 - 23x - 210}{x^3 - 4x^2 - 20x + 48}$

B. $f(x) = \dfrac{x^3 - 5x^2 - 26x + 120}{x^3 + 4x^2 - 20x - 48}$

C. $f(x) = \dfrac{x^3 + 5x^2 - 26x - 120}{x^3 - 4x^2 - 20x + 48}$

D. $f(x) = \dfrac{x^3 - 5x^2 - 26x + 120}{x^3 + 4x^2 - 20x - 48}$

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