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

$$f(x) = \frac{12x^3 + 41x^2 - 40x - 48}{4x^2 - 13x - 12}$$

A. Oblique Asymptote of $y = 3x + 20$.

B. Horizontal Asymptote of $y = 4.0$ and Oblique Asymptote of $y = 3x + 20$

C. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 3x + 20$

D. Horizontal Asymptote at $y = 4.0$

E. Horizontal Asymptote of $y = 3.0$

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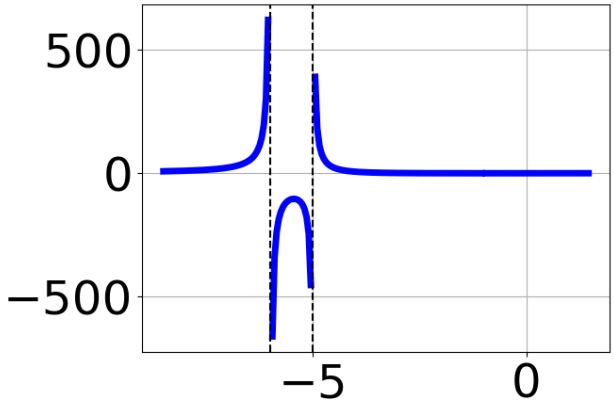
2. Which of the following functions *could* be the graph below?



A. $f(x) = \dfrac{x^3 + 4x^2 - 4x - 16}{x^3 + 12x^2 + 41x + 30}$

B. $f(x) = \dfrac{x^3 + x^2 - 4x - 4}{x^3 + 12x^2 + 41x + 30}$

C. $f(x) = \dfrac{x^3 - 1x^2 - 4x + 4}{x^3 - 12x^2 + 41x - 30}$

D. $f(x) = \dfrac{x^3 - 1x^2 - 4x + 4}{x^3 - 12x^2 + 41x - 30}$

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

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

$$f(x) = \frac{2x^2 + x - 6}{4x^3 + 4x^2 - 9x - 9}$$

A. Oblique Asymptote of $y = 2x + 1$.

B. Horizontal Asymptote at $y = -2.000$

C. Horizontal Asymptote of $y = 0.500$

D. Horizontal Asymptote of $y = 0$

E. Horizontal Asymptote of $y = 0.500$ and Oblique Asymptote of $y = 2x + 1$

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

$$f(x) = \frac{12x^3 + 49x^2 - 2x - 24}{12x^2 + 25x + 12}$$

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

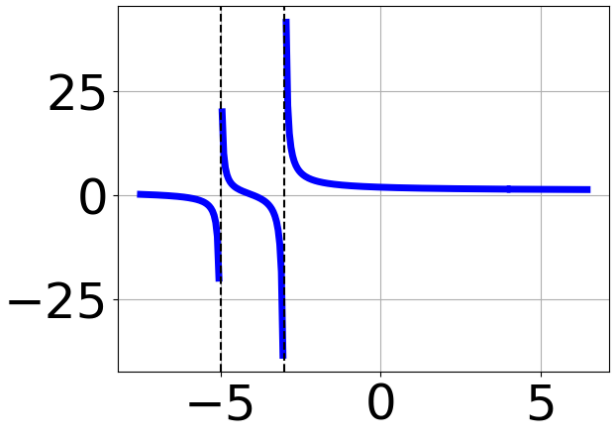
B. Vertical Asymptotes of $x = -1.333$ and $x = -0.75$ with no holes.

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

D. Vertical Asymptote of $x = 1.0$ and hole at $x = -0.75$

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

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



A. $f(x) = \dfrac{x^3 - 7x^2 - 16x + 112}{x^3 - 4x^2 - 17x + 60}$

B. $f(x) = \dfrac{x^3 - 7x^2 - 16x + 112}{x^3 - 4x^2 - 17x + 60}$

C. $f(x) = \dfrac{x^3 + 12x^2 + 39x + 28}{x^3 + 4x^2 - 17x - 60}$

D. $f(x) = \dfrac{x^3 + 7x^2 - 16x - 112}{x^3 + 4x^2 - 17x - 60}$

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.

$$f(x) = \frac{16x^3 - 16x^2 - 81x - 45}{12x^2 - 11x - 15}$$

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

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

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

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

E. Vertical Asymptotes of $x = 1.667$ 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.

$$f(x) = \frac{6x^3 + 47x^2 + 112x + 80}{2x^2 - x - 15}$$

A. Horizontal Asymptote of $y = 3.0$

B. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 3x + 25$

C. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 3x + 25$

D. Oblique Asymptote of $y = 3x + 25$.

E. Horizontal Asymptote at $y = 3.0$

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

$$f(x) = \frac{9x^3 + 9x^2 - 10x - 8}{9x^2 - 3x - 20}$$

A. Vertical Asymptote of $x = 1.667$ and hole at $x = -1.333$

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

C. Holes at $x = 1.667$ and $x = -1.333$ with no vertical asymptotes.

D. Vertical Asymptotes of $x = 1.667$ and $x = -1.333$ with no holes.

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

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

$$f(x) = \frac{6x^3 - 1x^2 - 11x + 6}{4x^2 + 16x + 15}$$

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

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

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

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

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

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

$$f(x) = \frac{4x^2 - 3x - 10}{24x^3 - 14x^2 - 35x + 25}$$

A. Horizontal Asymptote of $y = 0$

B. Horizontal Asymptote of $y = 0.167$

C. Horizontal Asymptote at $y = 2.000$

D. Horizontal Asymptote of $y = 0.167$ and Oblique Asymptote of $y = 6x + 1$

E. Oblique Asymptote of $y = 6x + 1$.
