

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

$$f(x) = \frac{8x^3 + 22x^2 - 21x - 45}{6x^2 - x - 12}$$

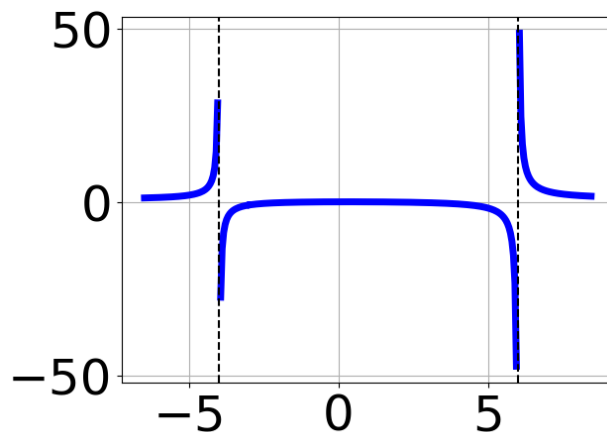
- A. Vertical Asymptote of  $x = 1.333$  and hole at  $x = 1.5$
  - B. Vertical Asymptote of  $x = -1.333$  and hole at  $x = 1.5$
  - C. Vertical Asymptotes of  $x = -1.333$  and  $x = -1.25$  with a hole at  $x = 1.5$
  - D. Vertical Asymptotes of  $x = -1.333$  and  $x = 1.5$  with no holes.
  - E. Holes at  $x = -1.333$  and  $x = 1.5$  with no vertical asymptotes.
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2. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{8x^3 + 14x^2 - 35x - 50}{2x^2 + 9x + 10}$$

- A. Horizontal Asymptote of  $y = -2.0$  and Oblique Asymptote of  $y = 4x - 11$
  - B. Horizontal Asymptote at  $y = -2.0$
  - C. Horizontal Asymptote of  $y = 4.0$  and Oblique Asymptote of  $y = 4x - 11$
  - D. Horizontal Asymptote of  $y = 4.0$
  - E. Oblique Asymptote of  $y = 4x - 11$ .
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3. Which of the following functions *could* be the graph below?



A.  $f(x) = \frac{x^3 - 2x^2 - 9x + 18}{x^3 - 1x^2 - 30x + 72}$

B.  $f(x) = \frac{x^3 + x^2 - 8x - 12}{x^3 + x^2 - 30x - 72}$

C.  $f(x) = \frac{x^3 - 2x^2 - 9x + 18}{x^3 - 1x^2 - 30x + 72}$

D.  $f(x) = \frac{x^3 + 2x^2 - 9x - 18}{x^3 + x^2 - 30x - 72}$

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

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

$$f(x) = \frac{6x^3 + 43x^2 + 86x + 40}{6x^2 + 11x - 10}$$

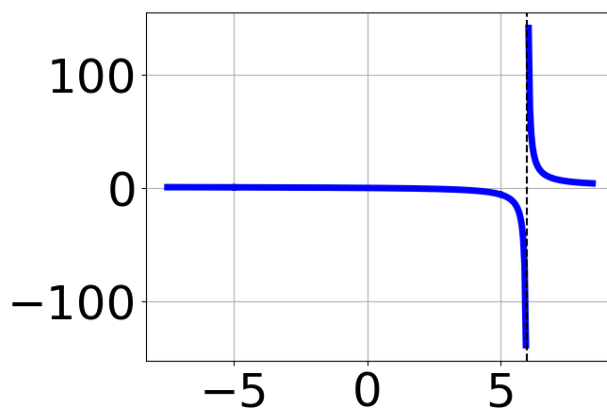
- A. Vertical Asymptotes of  $x = 0.667$  and  $x = -2.5$  with no holes.
- B. Vertical Asymptote of  $x = 1.0$  and hole at  $x = -2.5$
- C. Vertical Asymptotes of  $x = 0.667$  and  $x = -0.667$  with a hole at  $x = -2.5$
- D. Vertical Asymptote of  $x = 0.667$  and hole at  $x = -2.5$
- E. Holes at  $x = 0.667$  and  $x = -2.5$  with no vertical asymptotes.

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

$$f(x) = \frac{12x^3 + 41x^2 - 10x - 75}{15x^3 + 62x^2 + 131x + 60}$$

- A. Vertical Asymptote of  $y = -0.800$
  - B. None of the above
  - C. Horizontal Asymptote of  $y = 0.800$
  - D. Horizontal Asymptote of  $y = 0$
  - E. Vertical Asymptote of  $y = -3$
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6. Which of the following functions *could* be the graph below?



- A.  $f(x) = \frac{x^3 - 1x^2 - 25x + 25}{x^3 + 6x^2 - 25x - 150}$
  - B.  $f(x) = \frac{x^3 + x^2 - 25x - 25}{x^3 - 6x^2 - 25x + 150}$
  - C.  $f(x) = \frac{x^3 - 1x^2 - 25x + 25}{x^3 + 6x^2 - 25x - 150}$
  - D.  $f(x) = \frac{x^3 + 4x^2 - 15x - 18}{x^3 - 6x^2 - 25x + 150}$
  - E. None of the above are possible equations for the graph.
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7. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{6x^3 - 31x^2 + 8x + 80}{2x^2 - x - 10}$$

- A. Horizontal Asymptote at  $y = -2.0$
  - B. Horizontal Asymptote of  $y = 3.0$
  - C. Horizontal Asymptote of  $y = -2.0$  and Oblique Asymptote of  $y = 3x - 14$
  - D. Oblique Asymptote of  $y = 3x - 14$ .
  - E. Horizontal Asymptote of  $y = 3.0$  and Oblique Asymptote of  $y = 3x - 14$
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8. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{6x^3 + 13x^2 - 25x - 50}{9x^2 + 9x - 10}$$

- A. Vertical Asymptotes of  $x = 0.667$  and  $x = -2.5$  with a hole at  $x = -1.667$
  - B. Holes at  $x = 0.667$  and  $x = -1.667$  with no vertical asymptotes.
  - C. Vertical Asymptote of  $x = 0.667$  and hole at  $x = -1.667$
  - D. Vertical Asymptotes of  $x = 0.667$  and  $x = -1.667$  with no holes.
  - E. Vertical Asymptote of  $x = 0.667$  and hole at  $x = -1.667$
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9. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{18x^3 - 21x^2 - 7x + 10}{30x^3 - 68x^2 + 58x - 15}$$

- A. None of the above
- B. Horizontal Asymptote of  $y = 0$
- C. Vertical Asymptote of  $y = 1$

- D. Vertical Asymptote of  $y = 0.600$
  - E. Horizontal Asymptote of  $y = 0.600$
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10. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{6x^3 - 37x^2 + 58x - 24}{8x^2 - 18x + 9}$$

- A. Vertical Asymptote of  $x = 0.75$  and hole at  $x = 1.5$
  - B. Vertical Asymptotes of  $x = 0.75$  and  $x = 1.5$  with no holes.
  - C. Holes at  $x = 0.75$  and  $x = 1.5$  with no vertical asymptotes.
  - D. Vertical Asymptotes of  $x = 0.75$  and  $x = 0.667$  with a hole at  $x = 1.5$
  - E. Vertical Asymptote of  $x = 0.75$  and hole at  $x = 1.5$
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