1. Determine the domain of the function below.

$$f(x) = \frac{3}{12x^2 - 42x + 36}$$

A. All Real numbers except $x = a$, where $a \in [17.72, 18.31]$

B. All Real numbers except $x = a$, where $a \in [0.99, 1.64]$

C. All Real numbers except $x = a$ and $x = b$, where $a \in [0.99, 1.64]$ and $b \in [1.71, 2.74]$

D. All Real numbers.

E. All Real numbers except $x = a$ and $x = b$, where $a \in [17.72, 18.31]$ and $b \in [23.7, 24.06]$

2. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{-3}{4x + 2} + -8 = \frac{-3}{-8x - 4}$$

A. $x \in [-0.64, 0.36]$

B. $x \in [-0.2, 1]$

C. All solutions lead to invalid or complex values in the equation.

D. $x_1 \in [-1.6, -0.4]$ and $x_2 \in [0.1, 1.5]$

E. $x_1 \in [-1.6, -0.4]$ and $x_2 \in [-1.5, -0.4]$

3. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{-3x}{2x + 2} + \frac{-2x^2}{8x^2 - 6x - 14} = \frac{-4}{4x - 7}$$
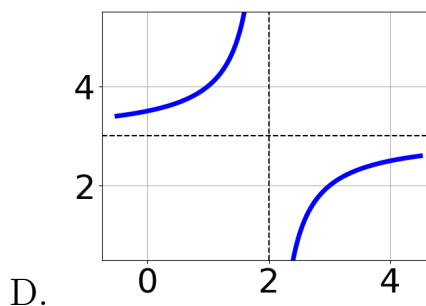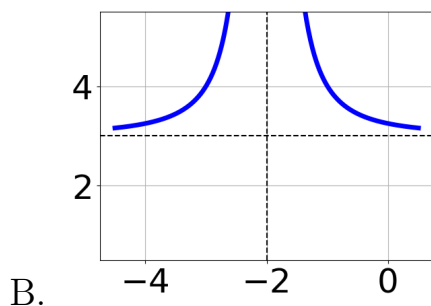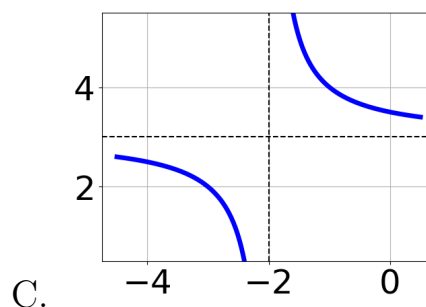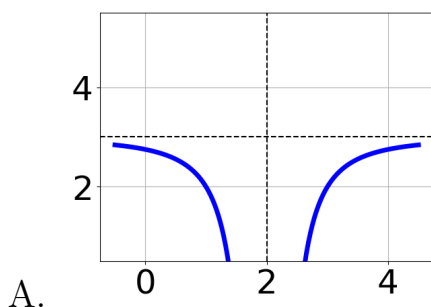
A. $x_1 \in [-0.26, 0.29]$ and $x_2 \in [-5, 1]$

B. All solutions lead to invalid or complex values in the equation.

C. $x \in [1.93, 2.75]$

D. $x \in [0.99, 2.19]$
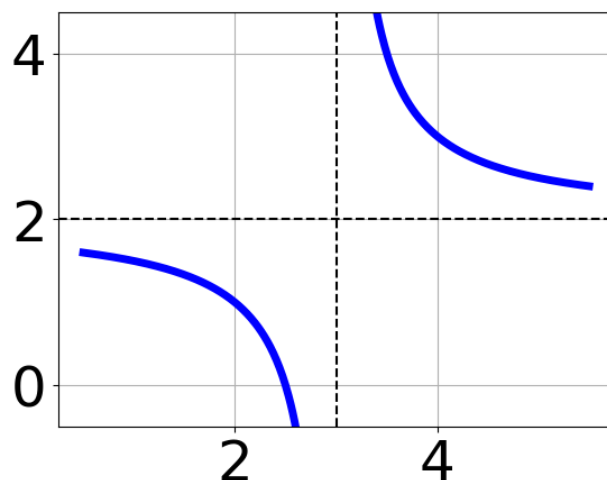
E. $x_1 \in [-0.26, 0.29]$ and $x_2 \in [1.32, 7.32]$

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4. Choose the graph of the equation below.

$$f(x) = \frac{1}{(x+2)^2} + 3$$

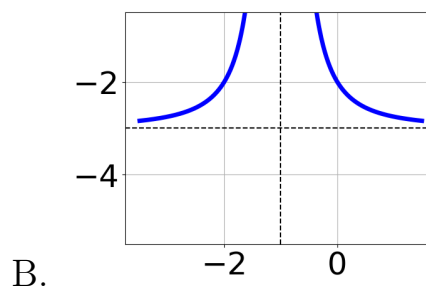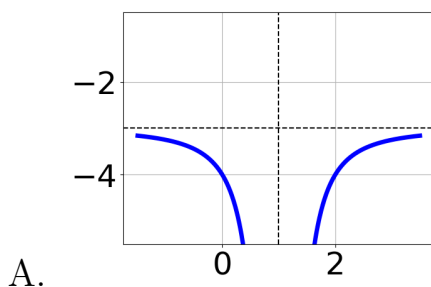A.

B.

C.

D.

E. None of the above.

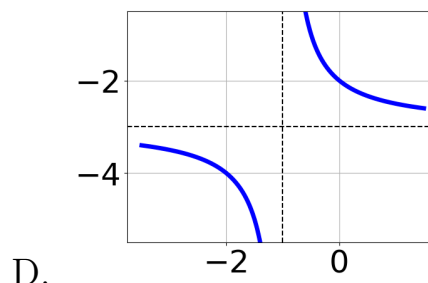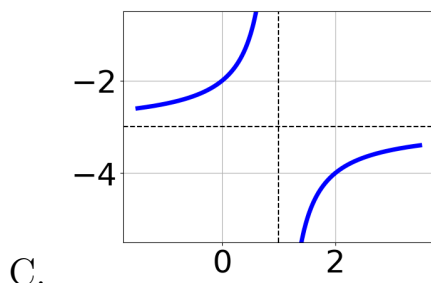5. Choose the equation of the function graphed below.

A. $f(x) = \dfrac{-1}{x + 3} + 2$

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

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

D. $f(x) = \dfrac{1}{x - 3} + 2$

E. None of the above

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6. Choose the graph of the equation below.

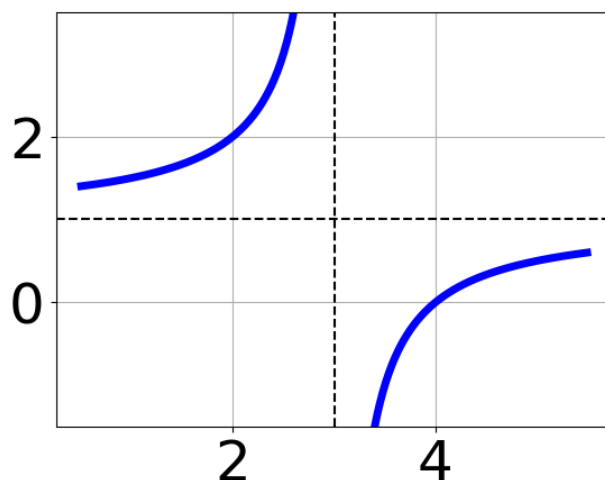$$f(x) = \dfrac{-1}{(x - 1)^2} - 3$$

A.

B.

C.

D.

E. None of the above.

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7. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{7x}{4x + 7} + \frac{-7x^2}{8x^2 + 34x + 35} = \frac{3}{2x + 5}$$

A. All solutions lead to invalid or complex values in the equation.

B. $x \in [-3.44, -2]$

C. $x_1 \in [0.45, 1.95]$ and $x_2 \in [-2.47, -1.38]$

D. $x \in [-5.2, -3.54]$

E. $x_1 \in [0.45, 1.95]$ and $x_2 \in [-5.59, -3.97]$

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8. Choose the equation of the function graphed below.

A. $f(x) = \dfrac{1}{(x-3)^2} + 1$

B. $f(x) = \dfrac{-1}{x+3} + 1$

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

D. $f(x) = \dfrac{1}{x-3} + 1$

E. None of the above

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9. Determine the domain of the function below.

$$f(x) = \frac{3}{16x^2 + 4x - 30}$$

A. All Real numbers except $x = a$, where $a \in [-24.4, -22.1]$

B. All Real numbers except $x = a$, where $a \in [-1.8, -1.4]$

C. All Real numbers.

D. All Real numbers except $x = a$ and $x = b$, where $a \in [-24.4, -22.1]$ and $b \in [18.5, 20.9]$

E. All Real numbers except $x = a$ and $x = b$, where $a \in [-1.8, -1.4]$ and $b \in [0.6, 2.9]$

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10. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{10}{-20x + 15} + 1 = \frac{10}{-20x + 15}$$

A. $x_1 \in [-0.25, 2.75]$ and $x_2 \in [0.75, 2.75]$

B. $x \in [-0.75, 0.25]$

C. All solutions lead to invalid or complex values in the equation.

D. $x \in [0.75, 1.75]$

E. $x_1 \in [-0.75, 0.25]$ and $x_2 \in [0.75, 2.75]$