

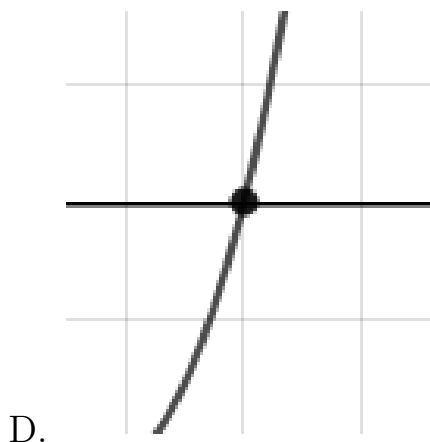
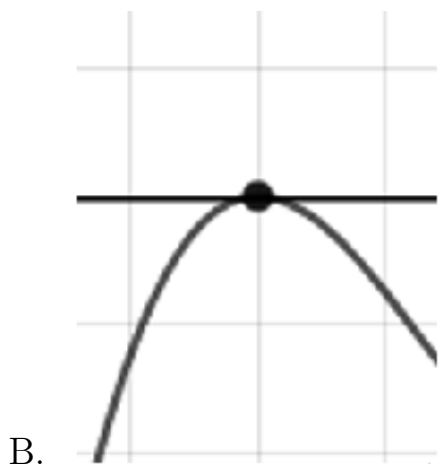
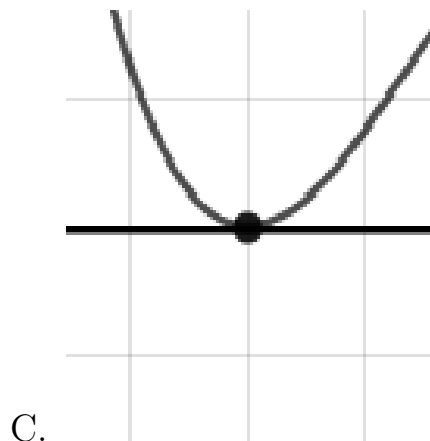
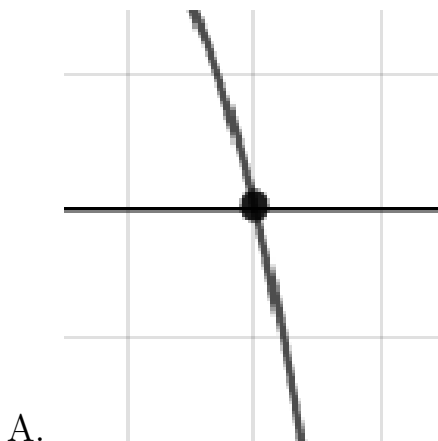
1. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$\frac{7}{3}, \frac{-5}{2}, \text{ and } \frac{-2}{3}$$

- A. $a \in [16, 21], b \in [-17, -12], c \in [-104, -99],$ and $d \in [68, 73]$
 B. $a \in [16, 21], b \in [11, 20], c \in [-104, -99],$ and $d \in [-70, -68]$
 C. $a \in [16, 21], b \in [8, 14], c \in [-111, -104],$ and $d \in [-70, -68]$
 D. $a \in [16, 21], b \in [11, 20], c \in [-104, -99],$ and $d \in [68, 73]$
 E. $a \in [16, 21], b \in [96, 104], c \in [162, 167],$ and $d \in [68, 73]$

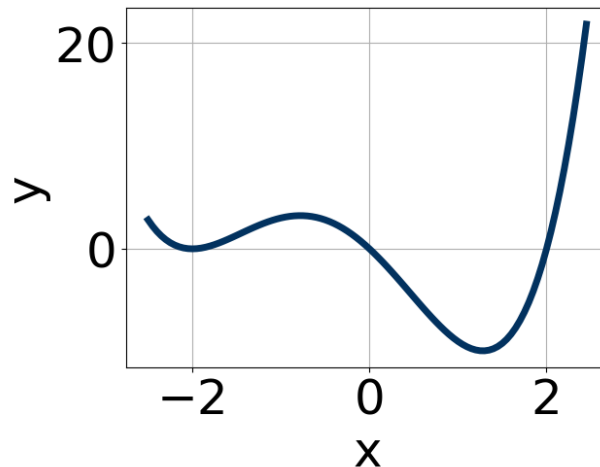
2. Describe the zero behavior of the zero $x = -2$ of the polynomial below.

$$f(x) = 2(x + 2)^8(x - 2)^{11}(x + 9)^3(x - 9)^6$$



E. None of the above.

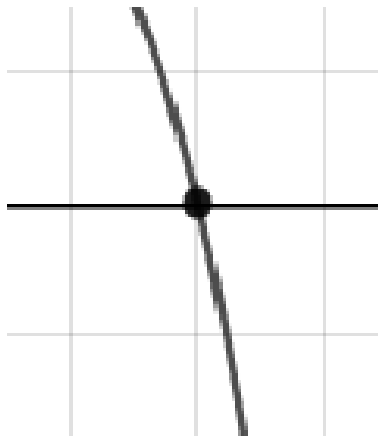
3. Which of the following equations *could* be of the graph presented below?



- A. $19x^{10}(x+2)^{10}(x-2)^7$
- B. $-4x^7(x+2)^8(x-2)^5$
- C. $-6x^9(x+2)^6(x-2)^4$
- D. $8x^5(x+2)^{10}(x-2)^7$
- E. $5x^4(x+2)^9(x-2)^7$

4. Describe the zero behavior of the zero $x = 7$ of the polynomial below.

$$f(x) = -2(x+9)^{10}(x-9)^8(x+7)^8(x-7)^5$$



A.

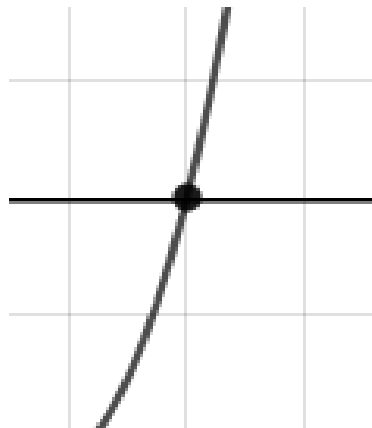
B.



C.

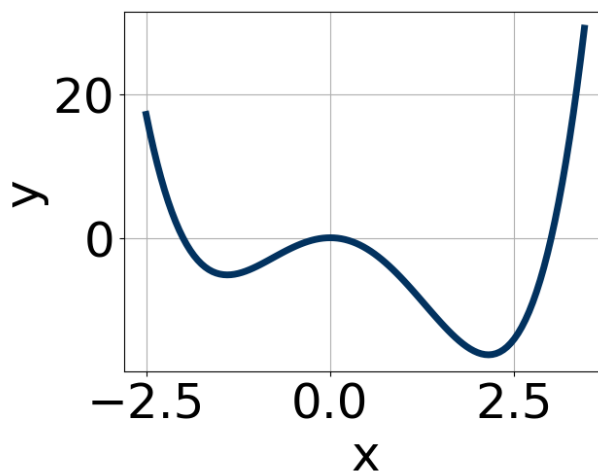


D.



E. None of the above.

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



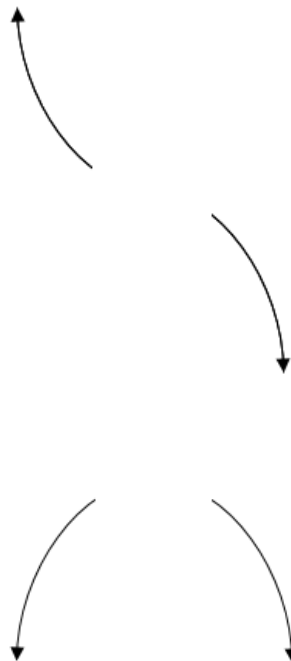
A. $-10x^8(x-3)^5(x+2)^7$

- B. $-5x^8(x-3)^9(x+2)^4$
 C. $12x^4(x-3)^{11}(x+2)^{11}$
 D. $11x^4(x-3)^{10}(x+2)^7$
 E. $19x^7(x-3)^8(x+2)^9$

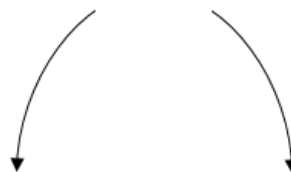
6. Describe the end behavior of the polynomial below.

$$f(x) = -5(x-9)^3(x+9)^6(x-7)^3(x+7)^5$$

A.



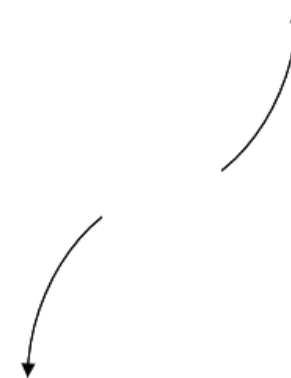
B.



C.



D.



E. None of the above.

7. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

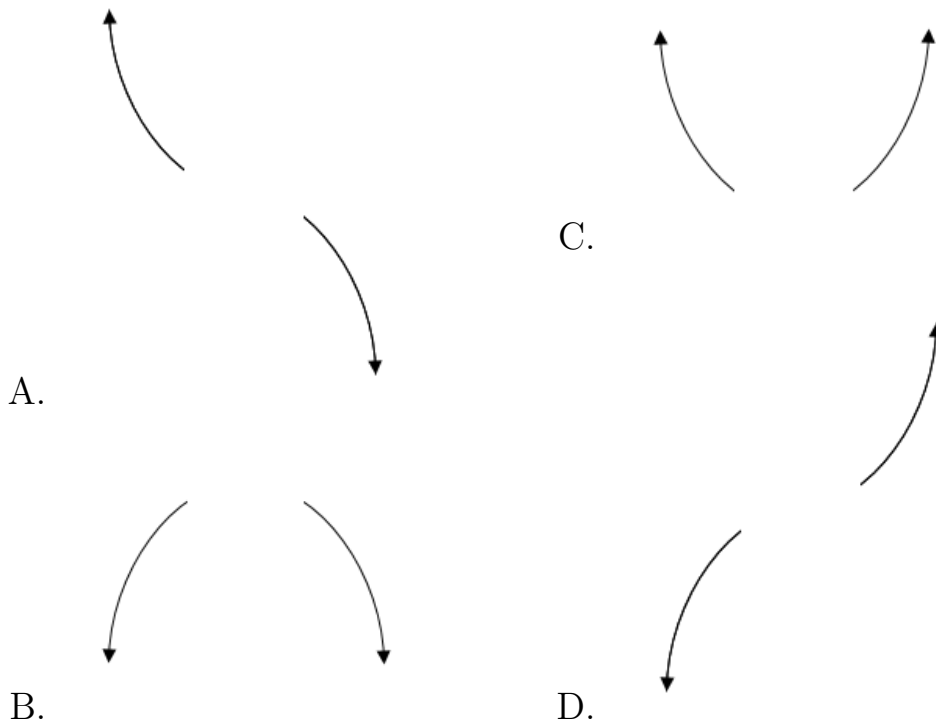
$$-4 + 2i \text{ and } -3$$

- A. $b \in [-17, -4]$, $c \in [38, 48]$, and $d \in [-61, -58]$

- B. $b \in [-4, 7], c \in [6, 11]$, and $d \in [7, 18]$
 C. $b \in [6, 12], c \in [38, 48]$, and $d \in [59, 70]$
 D. $b \in [-4, 7], c \in [-3, 2]$, and $d \in [-8, -3]$
 E. None of the above.

8. Describe the end behavior of the polynomial below.

$$f(x) = -2(x - 2)^2(x + 2)^7(x + 8)^3(x - 8)^5$$



E. None of the above.

9. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

$$-2 - 4i \text{ and } -2$$

- A. $b \in [-11, -3], c \in [27.08, 28.99]$, and $d \in [-40.7, -36.4]$

- B. $b \in [-3, 5]$, $c \in [4.37, 7.77]$, and $d \in [5.9, 8.6]$
C. $b \in [2, 15]$, $c \in [27.08, 28.99]$, and $d \in [36.9, 41.9]$
D. $b \in [-3, 5]$, $c \in [2.08, 5.16]$, and $d \in [2.9, 4.7]$
E. None of the above.
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10. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$5, \frac{-7}{4}, \text{ and } \frac{-4}{5}$$

- A. $a \in [19, 30]$, $b \in [-50, -45]$, $c \in [-227, -224]$, and $d \in [140, 146]$
B. $a \in [19, 30]$, $b \in [46, 52]$, $c \in [-227, -224]$, and $d \in [140, 146]$
C. $a \in [19, 30]$, $b \in [142, 154]$, $c \in [277, 289]$, and $d \in [140, 146]$
D. $a \in [19, 30]$, $b \in [77, 83]$, $c \in [-125, -118]$, and $d \in [-140, -135]$
E. $a \in [19, 30]$, $b \in [-50, -45]$, $c \in [-227, -224]$, and $d \in [-140, -135]$
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