

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

$$\frac{-2}{5}, 3, \text{ and } \frac{7}{4}$$

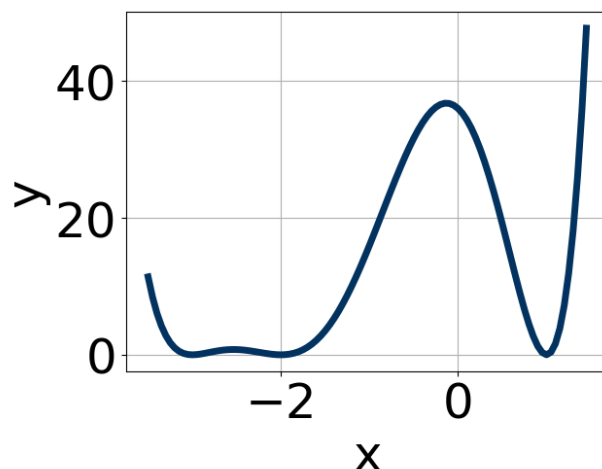
- A. $a \in [19, 21], b \in [7, 23], c \in [-120, -111], \text{ and } d \in [34, 44]$
- B. $a \in [19, 21], b \in [-89, -86], c \in [61, 71], \text{ and } d \in [34, 44]$
- C. $a \in [19, 21], b \in [87, 90], c \in [61, 71], \text{ and } d \in [-46, -36]$
- D. $a \in [19, 21], b \in [-89, -86], c \in [61, 71], \text{ and } d \in [-46, -36]$
- E. $a \in [19, 21], b \in [-104, -101], c \in [136, 145], \text{ and } d \in [-46, -36]$

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

$$4 - 4i \text{ and } 1$$

- A. $b \in [9, 11], c \in [39, 42], \text{ and } d \in [29, 35]$
- B. $b \in [1, 6], c \in [-8, -1], \text{ and } d \in [0, 5]$
- C. $b \in [1, 6], c \in [3, 11], \text{ and } d \in [-4, 3]$
- D. $b \in [-12, -6], c \in [39, 42], \text{ and } d \in [-35, -30]$
- E. None of the above.

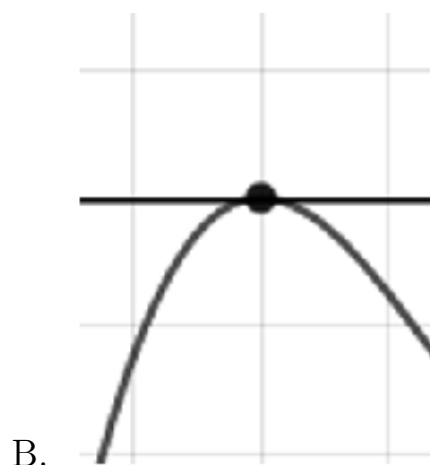
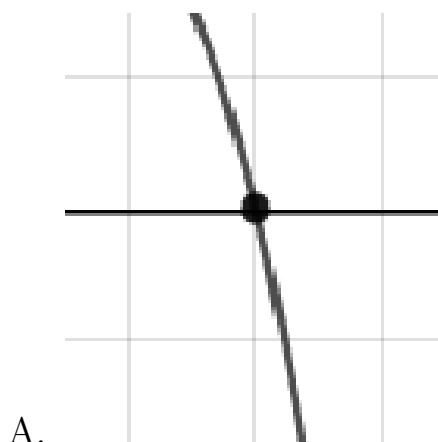
3. Which of the following equations *could* be of the graph presented below?



- A. $6(x + 2)^8(x - 1)^6(x + 3)^{10}$
- B. $2(x + 2)^{10}(x - 1)^4(x + 3)^5$
- C. $16(x + 2)^8(x - 1)^9(x + 3)^7$
- D. $-12(x + 2)^6(x - 1)^6(x + 3)^6$
- E. $-12(x + 2)^{10}(x - 1)^{10}(x + 3)^{11}$

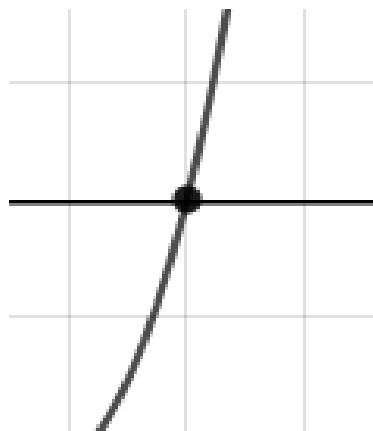
4. Describe the zero behavior of the zero $x = -6$ of the polynomial below.

$$f(x) = 5(x - 8)^9(x + 8)^6(x - 6)^{14}(x + 6)^9$$





C.

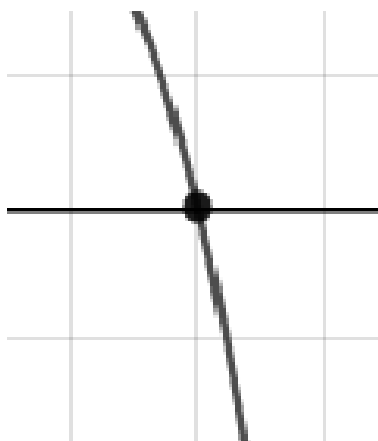


D.

E. None of the above.

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

$$f(x) = 3(x - 2)^3(x + 2)^8(x + 5)^6(x - 5)^7$$



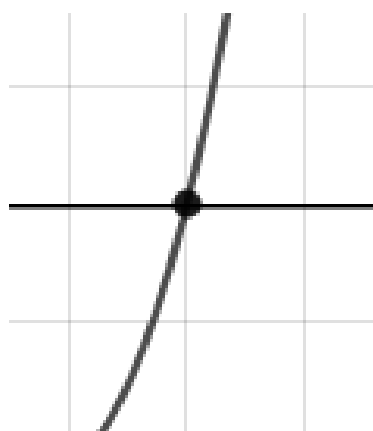
A.



C.



B.



D.

E. None of the above.

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

$$5 + 3i \text{ and } 1$$

- A. $b \in [7, 14], c \in [43.1, 45.1], \text{ and } d \in [32.85, 34.42]$
- B. $b \in [-4, 2], c \in [-6.2, -5.8], \text{ and } d \in [4.36, 5.61]$
- C. $b \in [-4, 2], c \in [-4.9, -1.2], \text{ and } d \in [1.56, 3.56]$
- D. $b \in [-13, -2], c \in [43.1, 45.1], \text{ and } d \in [-35.09, -33.44]$
- E. None of the above.

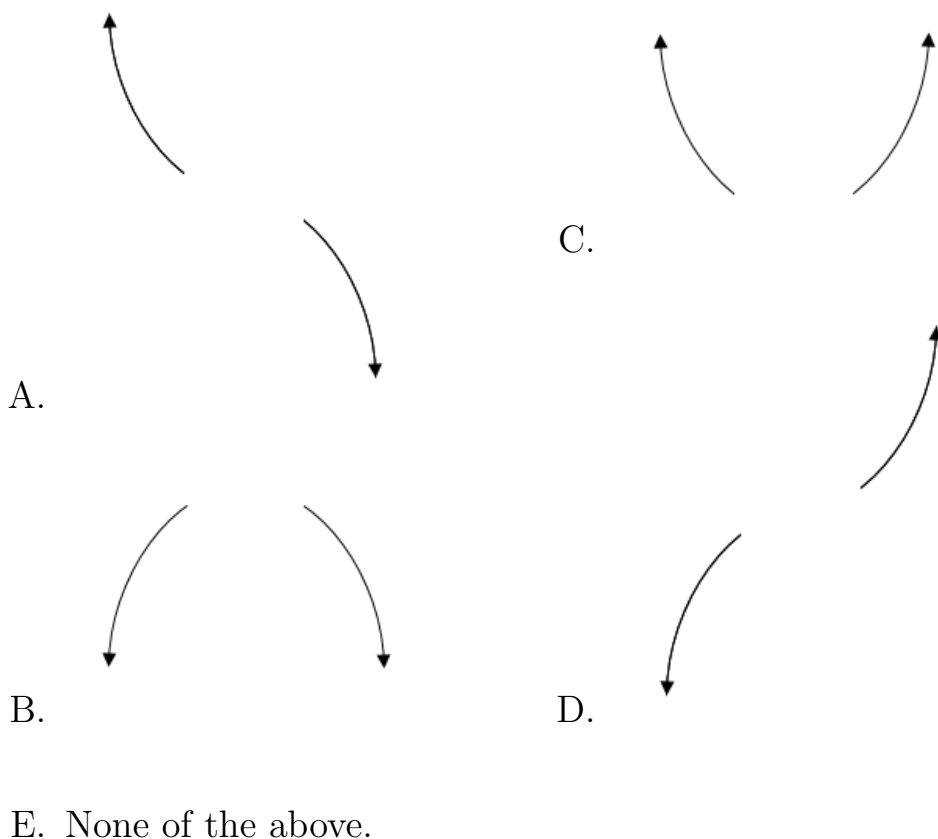
7. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

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

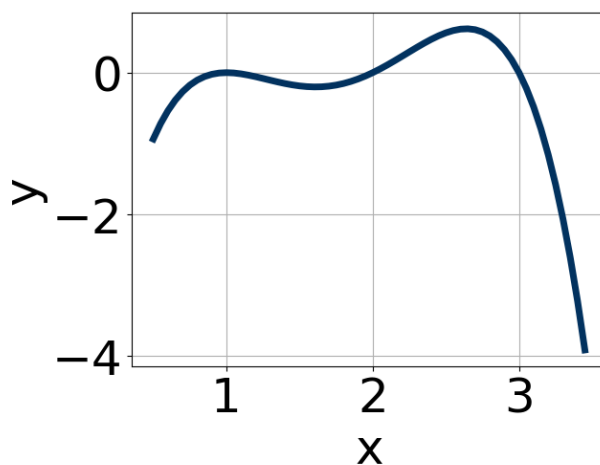
- A. $a \in [18, 20], b \in [44, 49], c \in [4, 9], \text{ and } d \in [-33, -23]$
- B. $a \in [18, 20], b \in [10, 22], c \in [-45, -37], \text{ and } d \in [-33, -23]$
- C. $a \in [18, 20], b \in [44, 49], c \in [4, 9], \text{ and } d \in [22, 35]$
- D. $a \in [18, 20], b \in [-52, -44], c \in [4, 9], \text{ and } d \in [22, 35]$
- E. $a \in [18, 20], b \in [69, 80], c \in [79, 85], \text{ and } d \in [22, 35]$

8. Describe the end behavior of the polynomial below.

$$f(x) = 7(x - 2)^4(x + 2)^7(x + 7)^4(x - 7)^4$$



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



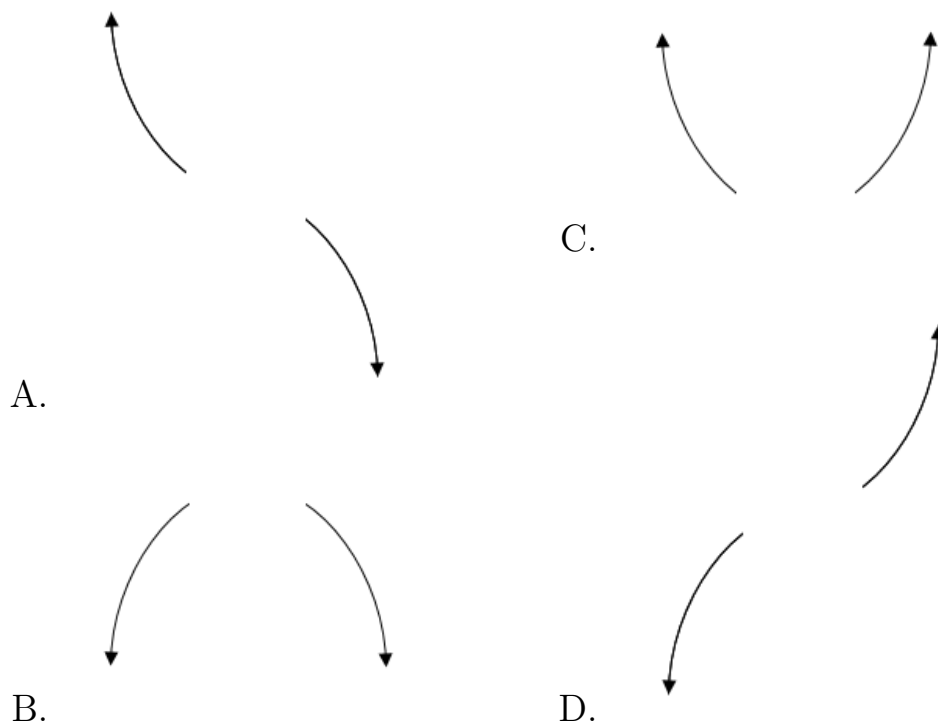
- A. $10(x - 1)^6(x - 2)^{11}(x - 3)^5$
 B. $-2(x - 1)^4(x - 2)^5(x - 3)^{11}$
 C. $-10(x - 1)^8(x - 2)^6(x - 3)^9$

D. $-18(x-1)^7(x-2)^{10}(x-3)^7$

E. $19(x-1)^{10}(x-2)^7(x-3)^8$

10. Describe the end behavior of the polynomial below.

$$f(x) = 6(x-3)^5(x+3)^8(x+6)^2(x-6)^2$$



E. None of the above.