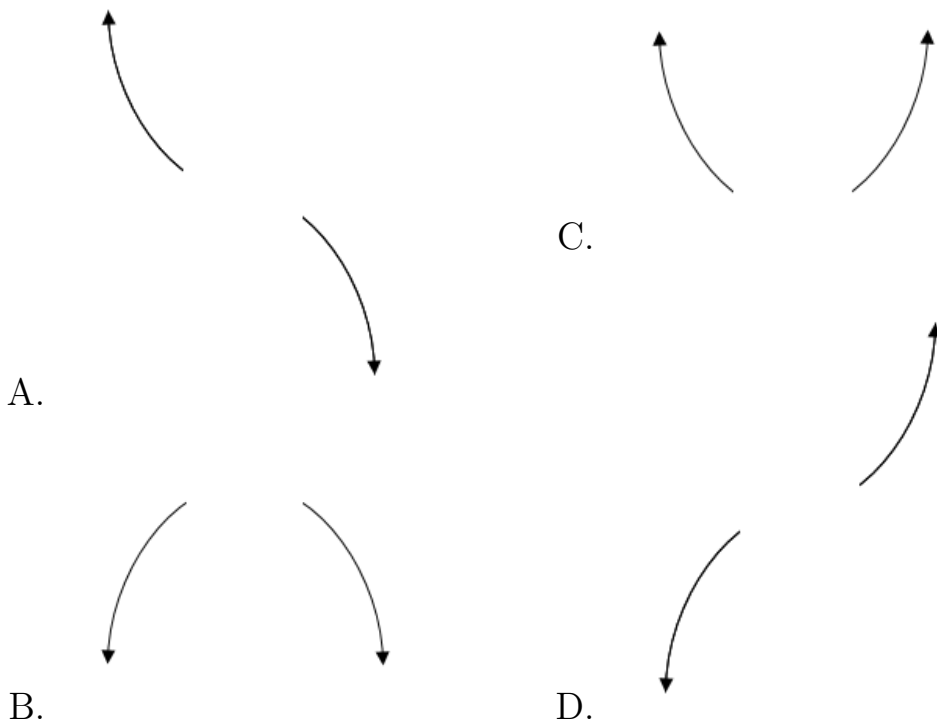


1. Describe the end behavior of the polynomial below.

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



E. None of the above.

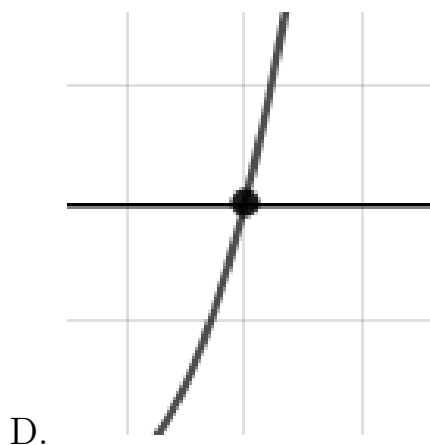
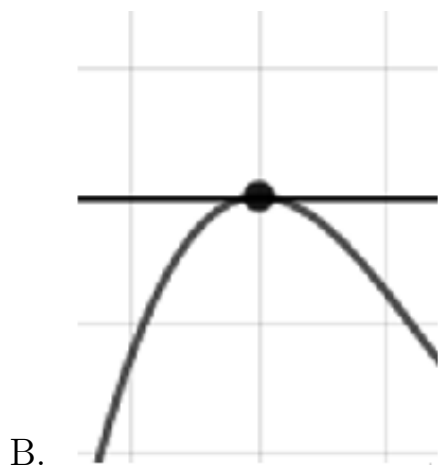
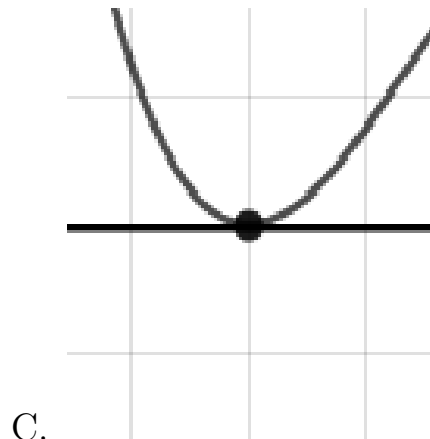
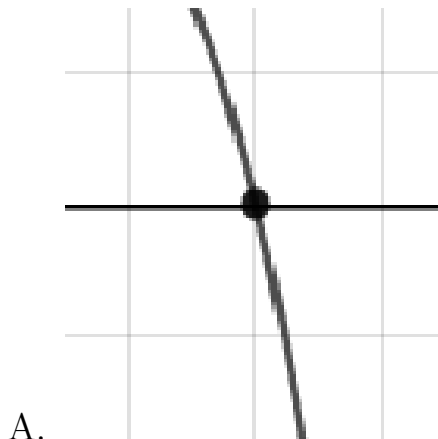
2. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$\frac{-4}{5}, \frac{-1}{5}, \text{ and } \frac{-4}{3}$$

- A. $a \in [74, 76], b \in [53, 57], c \in [-76, -63],$ and $d \in [-16, -13]$
- B. $a \in [74, 76], b \in [175, 179], c \in [112, 115],$ and $d \in [16, 17]$
- C. $a \in [74, 76], b \in [175, 179], c \in [112, 115],$ and $d \in [-16, -13]$
- D. $a \in [74, 76], b \in [-175, -173], c \in [112, 115],$ and $d \in [-16, -13]$
- E. $a \in [74, 76], b \in [22, 27], c \in [-91, -82],$ and $d \in [16, 17]$

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

$$f(x) = 2(x + 5)^9(x - 5)^{14}(x + 4)^3(x - 4)^4$$

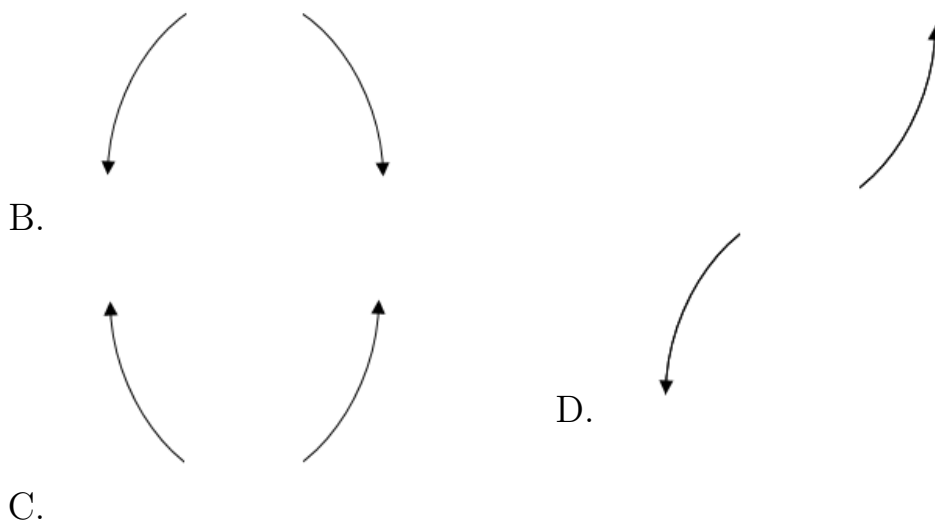


E. None of the above.

4. Describe the end behavior of the polynomial below.

$$f(x) = 7(x + 8)^5(x - 8)^8(x - 5)^4(x + 5)^4$$





E. None of the above.

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

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

- A. $b \in [-6.9, -0.4]$, $c \in [5.58, 7.49]$, and $d \in [71.2, 77.6]$
 B. $b \in [-0.2, 1.3]$, $c \in [-0.66, 2.32]$, and $d \in [-10.7, -7.6]$
 C. $b \in [1.9, 4.8]$, $c \in [5.58, 7.49]$, and $d \in [-77.3, -73.5]$
 D. $b \in [-0.2, 1.3]$, $c \in [-2.47, -0.78]$, and $d \in [-13.7, -9.8]$
 E. None of the above.

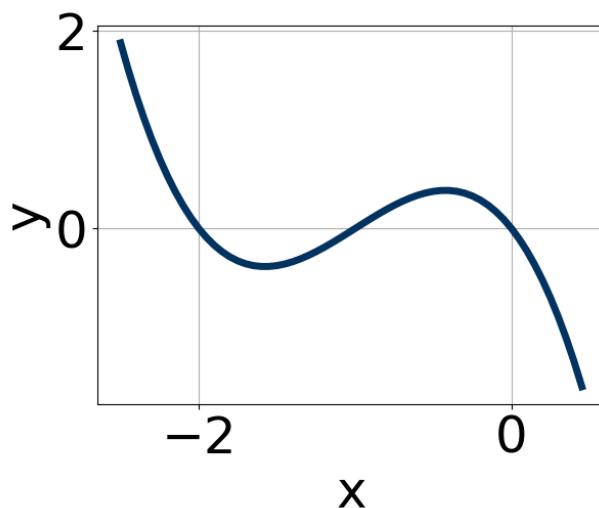
6. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$-7, \frac{1}{3}, \text{ and } \frac{5}{2}$$

- A. $a \in [4, 11]$, $b \in [-55, -52]$, $c \in [80, 87]$, and $d \in [29, 36]$

- B. $a \in [4, 11], b \in [-66, -57], c \in [118, 125]$, and $d \in [-41, -31]$
 C. $a \in [4, 11], b \in [-25, -20], c \in [-122, -107]$, and $d \in [-41, -31]$
 D. $a \in [4, 11], b \in [19, 27], c \in [-122, -107]$, and $d \in [29, 36]$
 E. $a \in [4, 11], b \in [19, 27], c \in [-122, -107]$, and $d \in [-41, -31]$

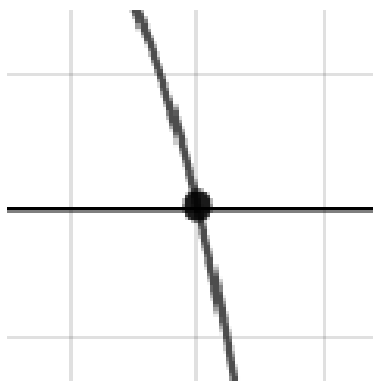
7. Which of the following equations *could* be of the graph presented below?



- A. $7x^9(x+1)^7(x+2)^5$
 B. $-7x^9(x+1)^{10}(x+2)^{11}$
 C. $3x^{11}(x+1)^8(x+2)^7$
 D. $-20x^7(x+1)^5(x+2)^9$
 E. $-3x^5(x+1)^{10}(x+2)^8$

8. Describe the zero behavior of the zero $x = 3$ of the polynomial below.

$$f(x) = 8(x-6)^{11}(x+6)^8(x+3)^7(x-3)^2$$



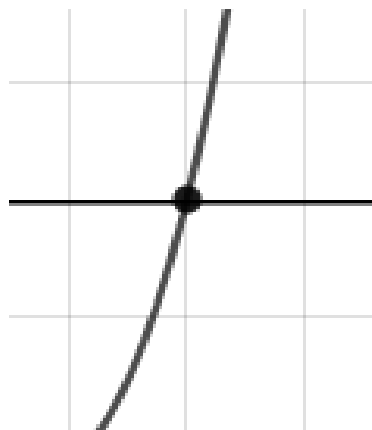
B.



C.



D.



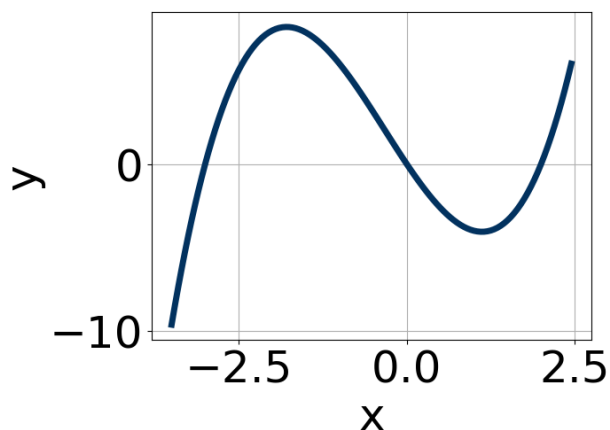
E. None of the above.

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

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

- A. $b \in [-2.3, 2.2]$, $c \in [-3, 10]$, and $d \in [-22, -15]$
 B. $b \in [-2.3, 2.2]$, $c \in [-14, -6]$, and $d \in [11, 19]$
 C. $b \in [-5.4, -1]$, $c \in [-3, 10]$, and $d \in [123, 134]$
 D. $b \in [2.1, 5.3]$, $c \in [-3, 10]$, and $d \in [-138, -126]$
 E. None of the above.

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



- A. $9x^8(x+3)^6(x-2)^{11}$
- B. $10x^9(x+3)^6(x-2)^{11}$
- C. $-14x^{11}(x+3)^{10}(x-2)^7$
- D. $-10x^9(x+3)^5(x-2)^7$
- E. $3x^5(x+3)^9(x-2)^5$