

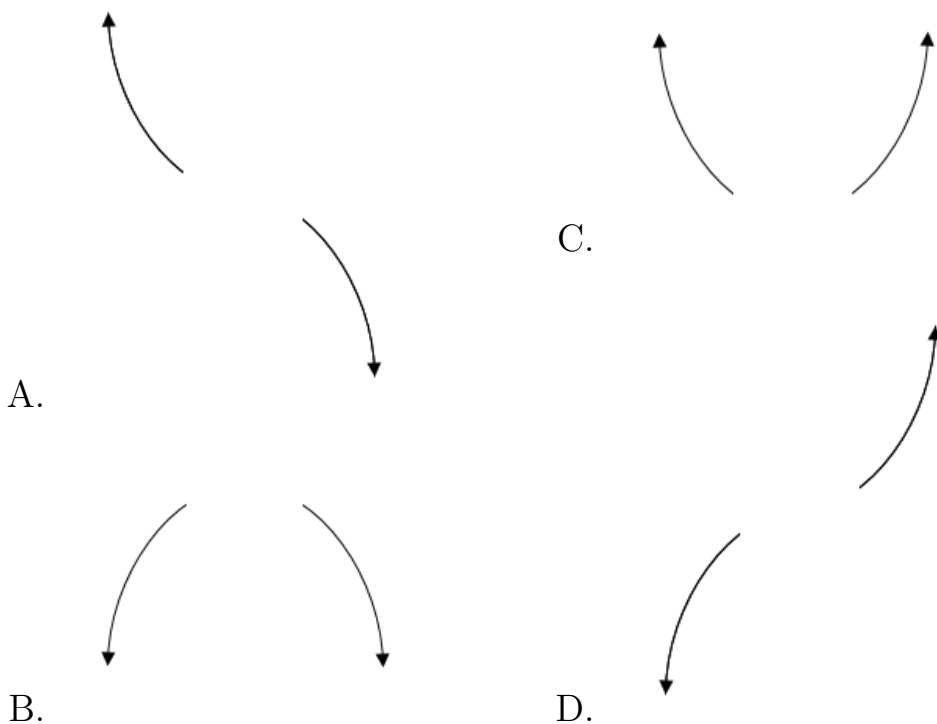
1. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form  $x^3 + bx^2 + cx + d$ .

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

- A.  $b \in [10, 18], c \in [62.11, 64.76],$  and  $d \in [101, 106.3]$   
 B.  $b \in [-21, -5], c \in [62.11, 64.76],$  and  $d \in [-105.1, -100.1]$   
 C.  $b \in [1, 3], c \in [-8.79, -7.83],$  and  $d \in [11.8, 17]$   
 D.  $b \in [1, 3], c \in [-7.39, -4.76],$  and  $d \in [5.2, 9.5]$   
 E. None of the above.

2. Describe the end behavior of the polynomial below.

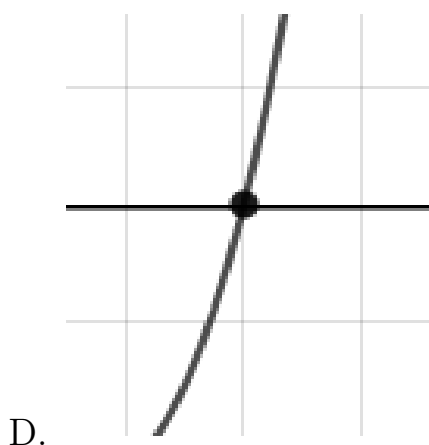
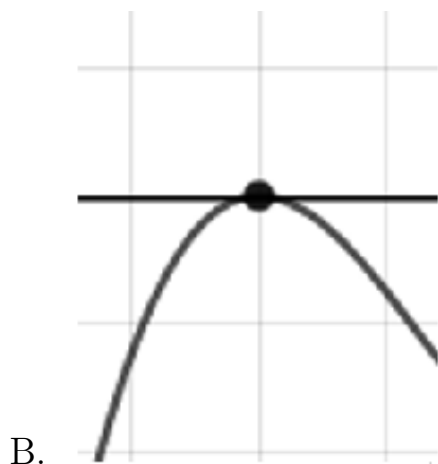
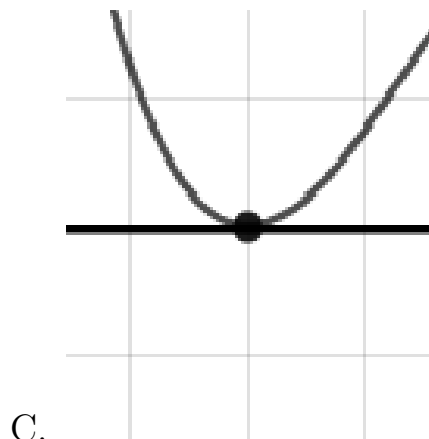
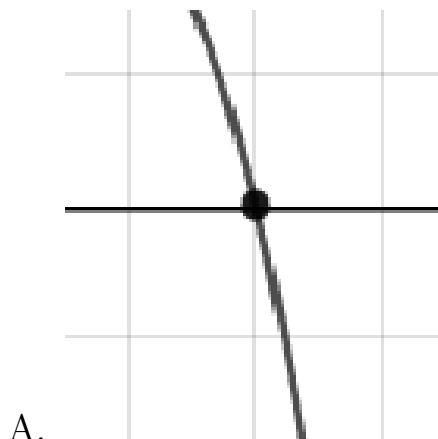
$$f(x) = 8(x - 6)^4(x + 6)^9(x + 9)^4(x - 9)^5$$



- E. None of the above.

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

$$f(x) = 9(x + 7)^8(x - 7)^{11}(x - 3)^7(x + 3)^{10}$$



E. None of the above.

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

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

- A.  $a \in [12, 15], b \in [-43, -40], c \in [-16, -2],$  and  $d \in [71, 81]$   
 B.  $a \in [12, 15], b \in [37, 49], c \in [-16, -2],$  and  $d \in [71, 81]$   
 C.  $a \in [12, 15], b \in [-2, 3], c \in [-84, -79],$  and  $d \in [71, 81]$

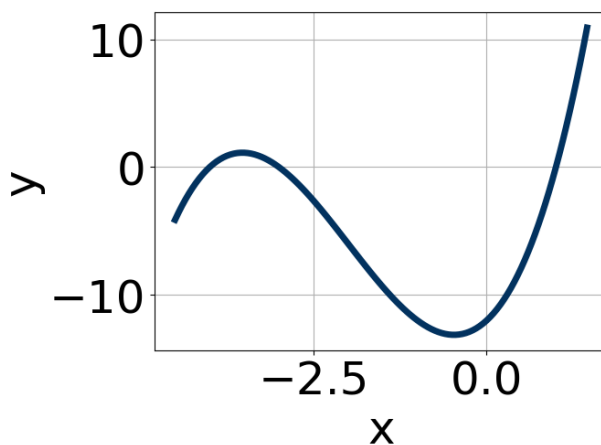
- D.  $a \in [12, 15], b \in [37, 49], c \in [-16, -2],$  and  $d \in [-78, -73]$
- E.  $a \in [12, 15], b \in [-85, -66], c \in [126, 135],$  and  $d \in [-78, -73]$

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

$$\frac{-6}{5}, \frac{-4}{3}, \text{ and } -3$$

- A.  $a \in [13, 21], b \in [76, 90], c \in [133, 140],$  and  $d \in [-75, -70]$
- B.  $a \in [13, 21], b \in [42, 53], c \in [-19, -16],$  and  $d \in [-75, -70]$
- C.  $a \in [13, 21], b \in [3, 8], c \in [-91, -85],$  and  $d \in [66, 76]$
- D.  $a \in [13, 21], b \in [-84, -78], c \in [133, 140],$  and  $d \in [-75, -70]$
- E.  $a \in [13, 21], b \in [76, 90], c \in [133, 140],$  and  $d \in [66, 76]$

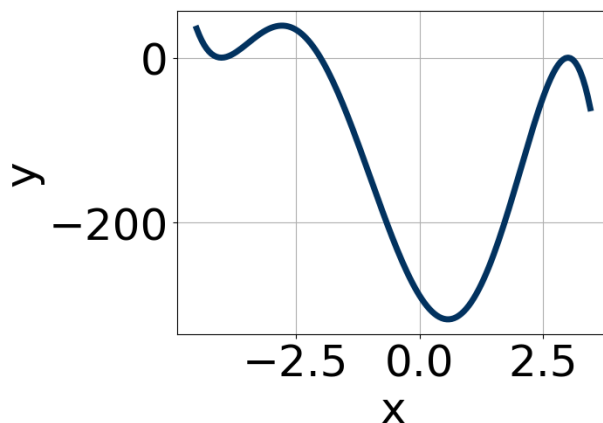
6. Which of the following equations *could* be of the graph presented below?



- A.  $-11(x + 4)^7(x - 1)^7(x + 3)^{11}$
- B.  $-3(x + 4)^8(x - 1)^{11}(x + 3)^{11}$
- C.  $18(x + 4)^8(x - 1)^7(x + 3)^5$
- D.  $6(x + 4)^4(x - 1)^{10}(x + 3)^5$

E.  $20(x + 4)^9(x - 1)^{11}(x + 3)^7$

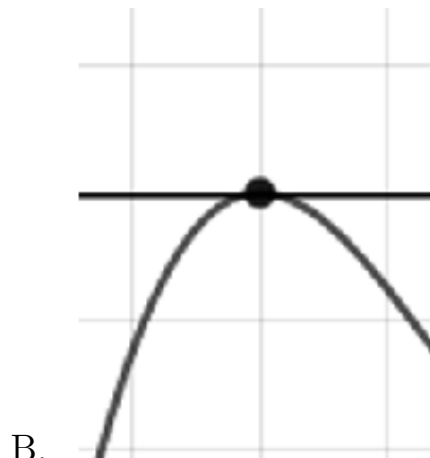
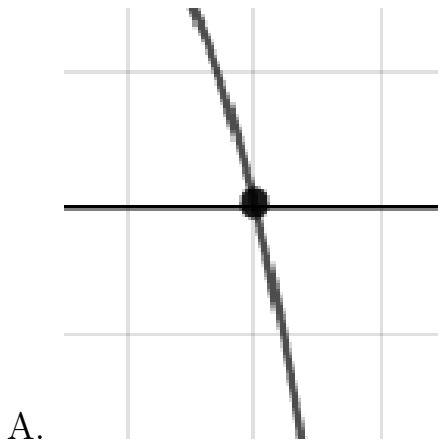
7. Which of the following equations *could* be of the graph presented below?



- A.  $-5(x + 4)^{10}(x - 3)^{11}(x + 2)^7$   
 B.  $-11(x + 4)^6(x - 3)^{10}(x + 2)^5$   
 C.  $9(x + 4)^6(x - 3)^{10}(x + 2)^{11}$   
 D.  $-19(x + 4)^4(x - 3)^9(x + 2)^6$   
 E.  $19(x + 4)^4(x - 3)^8(x + 2)^4$

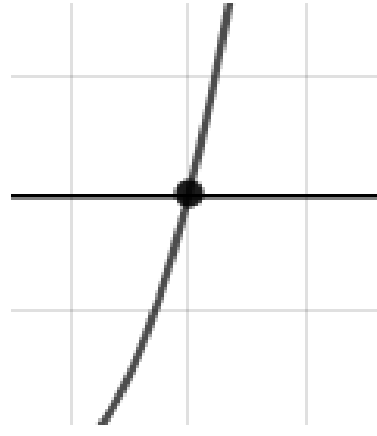
8. Describe the zero behavior of the zero  $x = -7$  of the polynomial below.

$$f(x) = -8(x - 7)^8(x + 7)^{13}(x - 9)^4(x + 9)^7$$





C.



D.

E. None of the above.

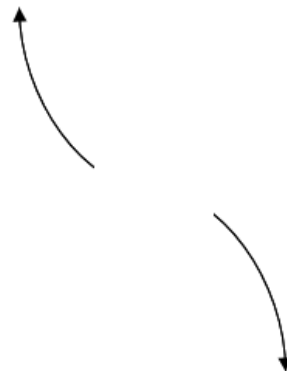
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9. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form  $x^3 + bx^2 + cx + d$ .

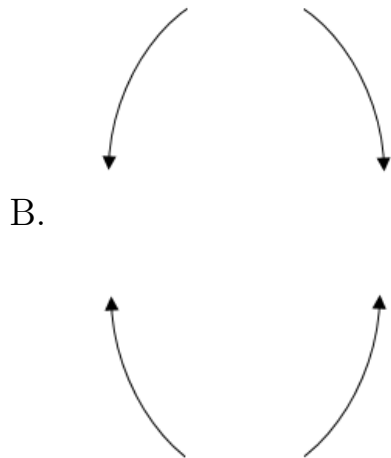
$$-5 + 3i \text{ and } 1$$

- A.  $b \in [4, 10], c \in [22, 26],$  and  $d \in [-38, -33]$   
 B.  $b \in [-16, -7], c \in [22, 26],$  and  $d \in [27, 36]$   
 C.  $b \in [-4, 5], c \in [1, 6],$  and  $d \in [-12, -3]$   
 D.  $b \in [-4, 5], c \in [-4, 0],$  and  $d \in [2, 4]$   
 E. None of the above.

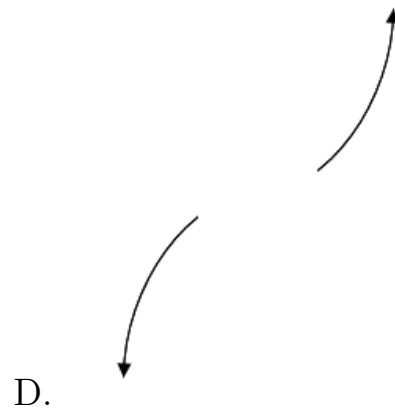
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10. Describe the end behavior of the polynomial below.

$$f(x) = -4(x + 4)^3(x - 4)^6(x - 5)^2(x + 5)^3$$





C.



E. None of the above.

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