

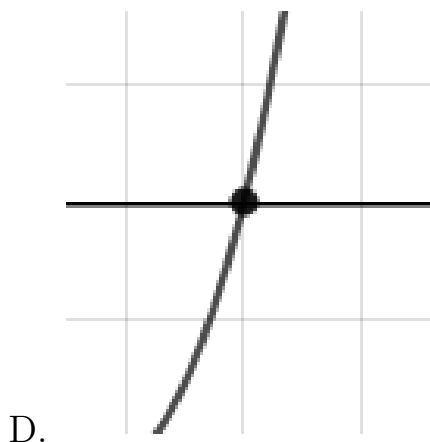
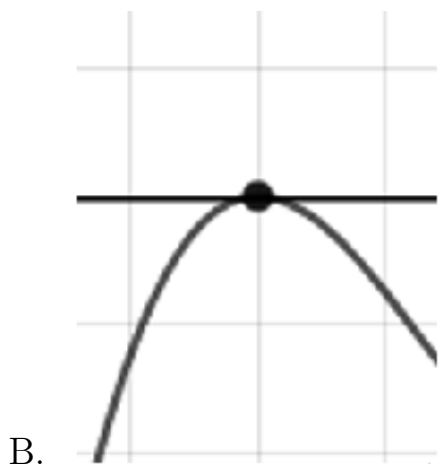
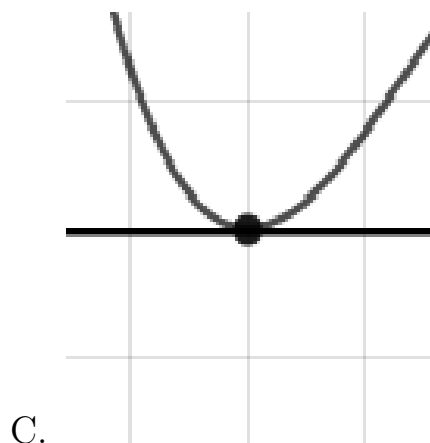
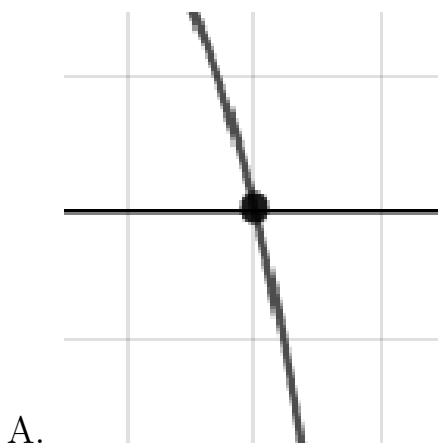
1. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form  $ax^3 + bx^2 + cx + d$ .

$$\frac{7}{2}, 2, \text{ and } \frac{1}{2}$$

- A.  $a \in [3, 5], b \in [0, 7], c \in [-32, -29]$ , and  $d \in [13, 21]$   
 B.  $a \in [3, 5], b \in [-31, -17], c \in [36, 41]$ , and  $d \in [13, 21]$   
 C.  $a \in [3, 5], b \in [-31, -17], c \in [36, 41]$ , and  $d \in [-19, -5]$   
 D.  $a \in [3, 5], b \in [16, 21], c \in [16, 19]$ , and  $d \in [-19, -5]$   
 E.  $a \in [3, 5], b \in [24, 25], c \in [36, 41]$ , and  $d \in [13, 21]$

2. Describe the zero behavior of the zero  $x = 9$  of the polynomial below.

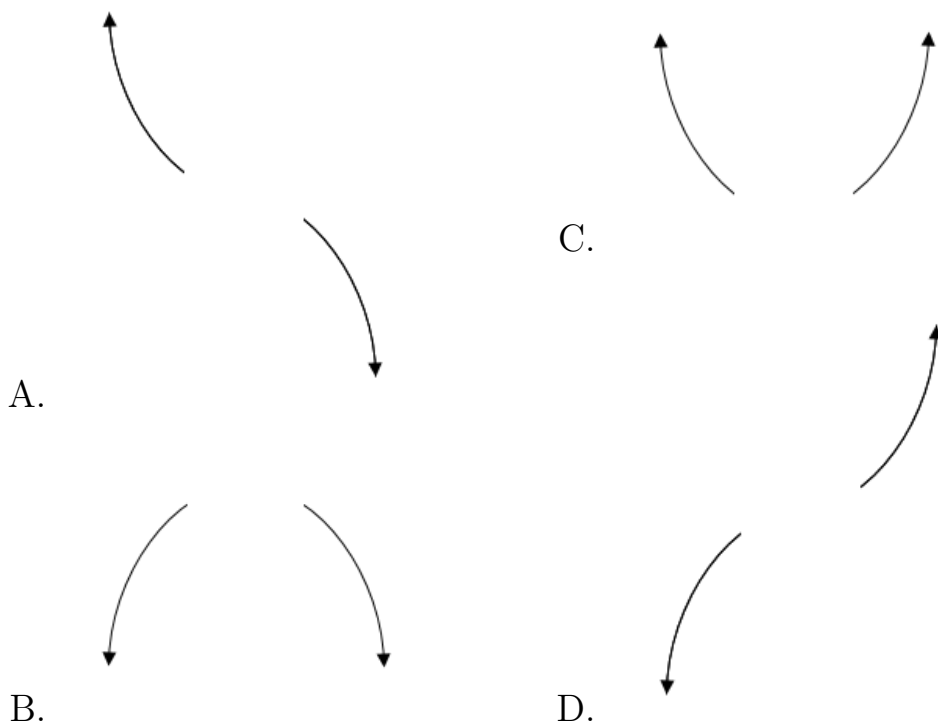
$$f(x) = -8(x + 2)^7(x - 2)^4(x + 9)^8(x - 9)^7$$



E. None of the above.

3. Describe the end behavior of the polynomial below.

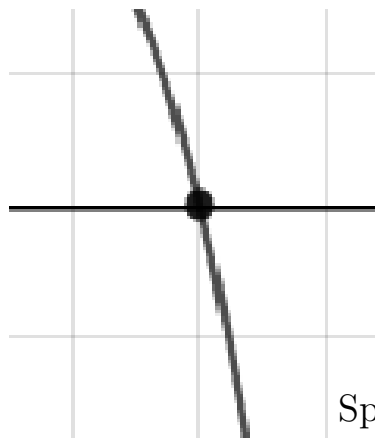
$$f(x) = 8(x + 4)^3(x - 4)^6(x + 9)^4(x - 9)^5$$



E. None of the above.

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

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



A.

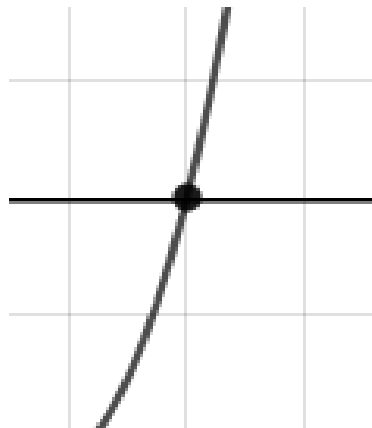
B.



C.



D.

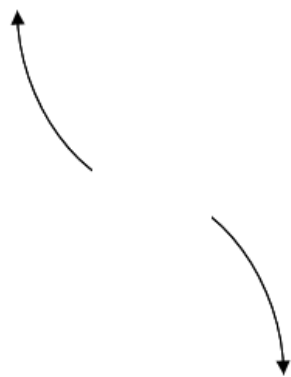


E. None of the above.

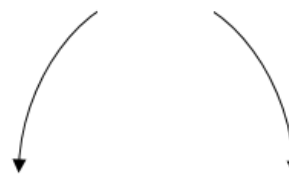
5. Describe the end behavior of the polynomial below.

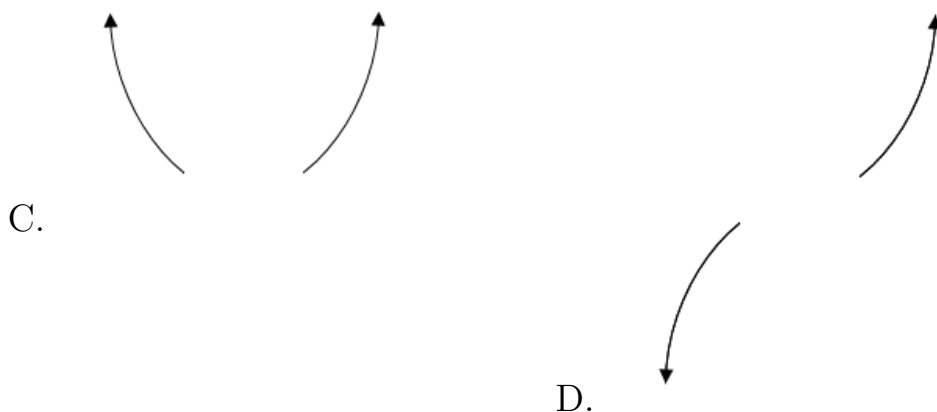
$$f(x) = 2(x + 3)^4(x - 3)^9(x + 9)^4(x - 9)^5$$

A.



B.





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  $x^3 + bx^2 + cx + d$ .

$$-4 - 5i \text{ and } -4$$

- A.  $b \in [6, 13], c \in [72.58, 73.76]$ , and  $d \in [162.4, 169]$
- B.  $b \in [-3, 10], c \in [8.81, 9.58]$ , and  $d \in [19.5, 21.2]$
- C.  $b \in [-3, 10], c \in [7.93, 8.59]$ , and  $d \in [15.7, 18.2]$
- D.  $b \in [-15, -4], c \in [72.58, 73.76]$ , and  $d \in [-165.5, -160.5]$
- 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  $x^3 + bx^2 + cx + d$ .

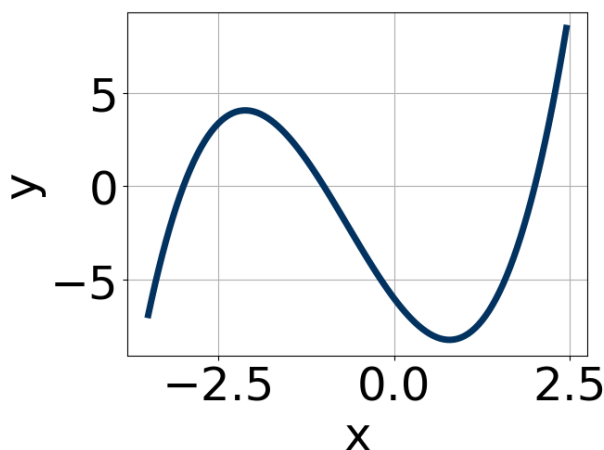
$$-3 + 5i \text{ and } -4$$

- A.  $b \in [-12, -7], c \in [50, 59]$ , and  $d \in [-140, -131]$
- B.  $b \in [5, 18], c \in [50, 59]$ , and  $d \in [136, 142]$
- C.  $b \in [-3, 9], c \in [-5, 5]$ , and  $d \in [-26, -19]$

D.  $b \in [-3, 9]$ ,  $c \in [2, 14]$ , and  $d \in [7, 17]$

E. None of the above.

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



A.  $4(x + 3)^4(x + 1)^4(x - 2)^{11}$

B.  $18(x + 3)^4(x + 1)^9(x - 2)^7$

C.  $-15(x + 3)^8(x + 1)^9(x - 2)^7$

D.  $-19(x + 3)^7(x + 1)^5(x - 2)^{11}$

E.  $13(x + 3)^7(x + 1)^5(x - 2)^7$

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

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

A.  $a \in [60, 61]$ ,  $b \in [135, 149]$ ,  $c \in [-4, 9]$ , and  $d \in [-115, -100]$

B.  $a \in [60, 61]$ ,  $b \in [-229, -223]$ ,  $c \in [275, 281]$ , and  $d \in [-115, -100]$

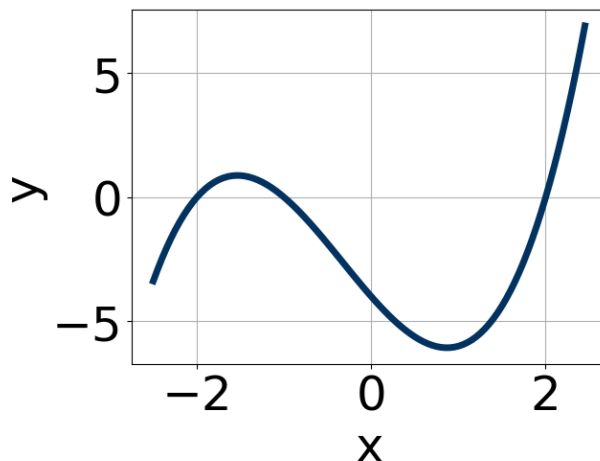
C.  $a \in [60, 61]$ ,  $b \in [135, 149]$ ,  $c \in [-4, 9]$ , and  $d \in [104, 108]$

D.  $a \in [60, 61]$ ,  $b \in [-32, -25]$ ,  $c \in [-153, -151]$ , and  $d \in [104, 108]$

E.  $a \in [60, 61]$ ,  $b \in [-142, -136]$ ,  $c \in [-4, 9]$ , and  $d \in [104, 108]$

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



- A.  $-5(x + 2)^4(x - 2)^5(x + 1)^5$
  - B.  $8(x + 2)^7(x - 2)^9(x + 1)^7$
  - C.  $17(x + 2)^4(x - 2)^{10}(x + 1)^{11}$
  - D.  $18(x + 2)^8(x - 2)^9(x + 1)^9$
  - E.  $-16(x + 2)^7(x - 2)^{11}(x + 1)^7$
-