

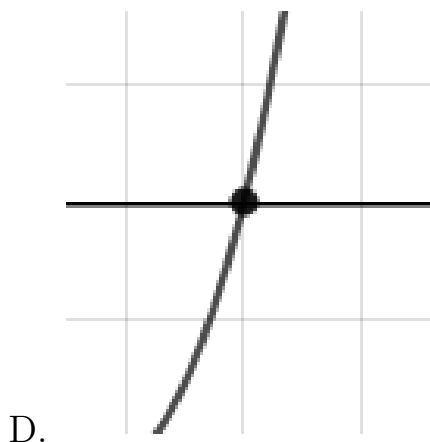
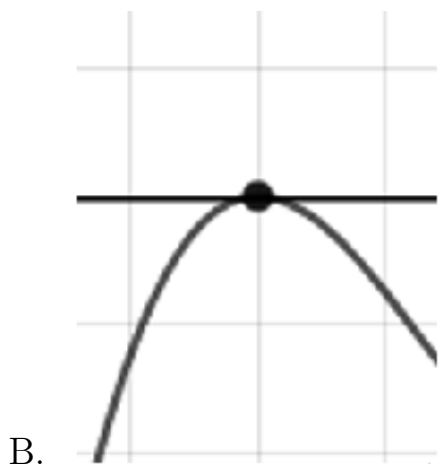
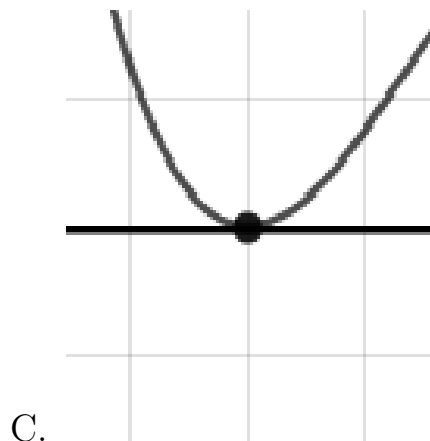
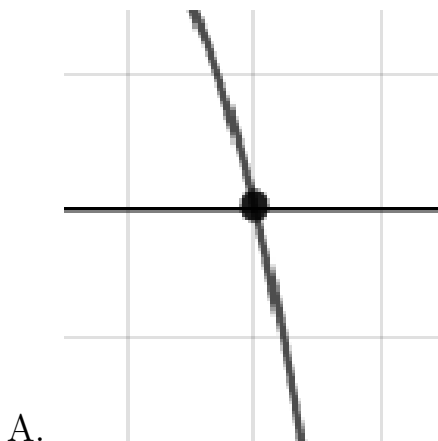
1. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

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

- A. $a \in [12, 15], b \in [13, 23], c \in [-67, -64],$ and $d \in [-114, -101]$
 B. $a \in [12, 15], b \in [-77, -70], c \in [156, 158],$ and $d \in [105, 106]$
 C. $a \in [12, 15], b \in [-24, -14], c \in [-83, -68],$ and $d \in [105, 106]$
 D. $a \in [12, 15], b \in [-77, -70], c \in [156, 158],$ and $d \in [-114, -101]$
 E. $a \in [12, 15], b \in [70, 79], c \in [156, 158],$ and $d \in [105, 106]$

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

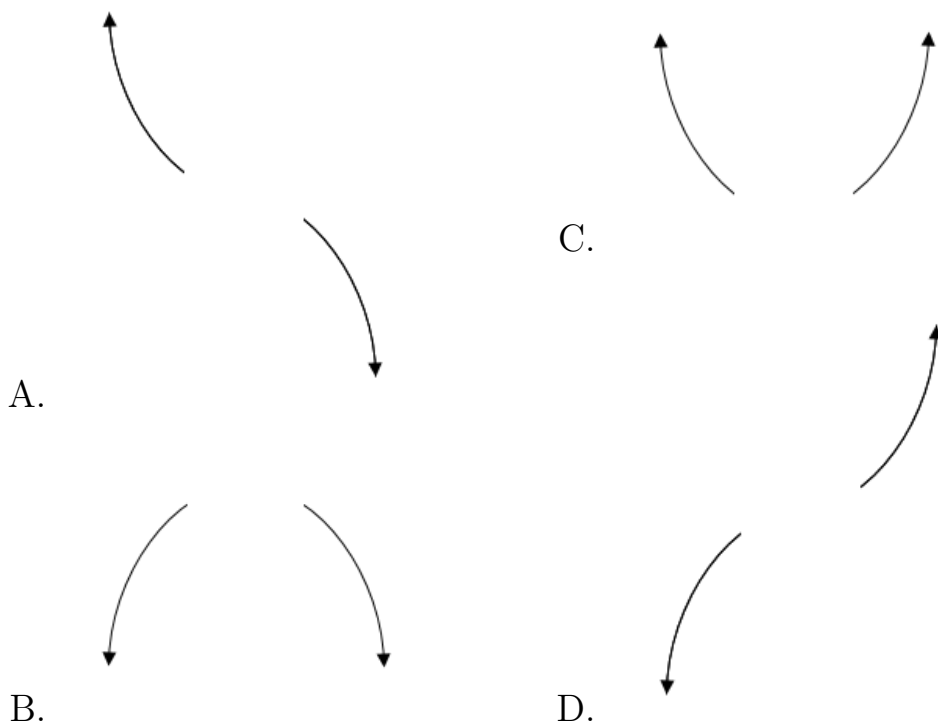
$$f(x) = 4(x - 2)^7(x + 2)^5(x - 4)^6(x + 4)^3$$



E. None of the above.

3. Describe the end behavior of the polynomial below.

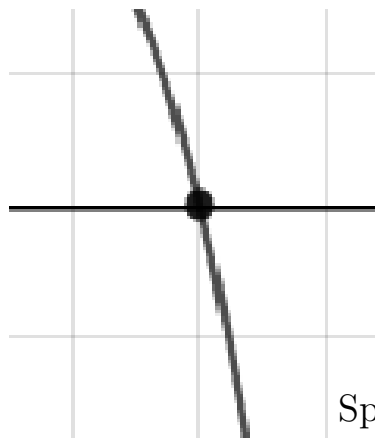
$$f(x) = -3(x - 5)^2(x + 5)^3(x - 8)^5(x + 8)^6$$



E. None of the above.

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

$$f(x) = 3(x - 4)^8(x + 4)^7(x - 5)^{14}(x + 5)^9$$



A.

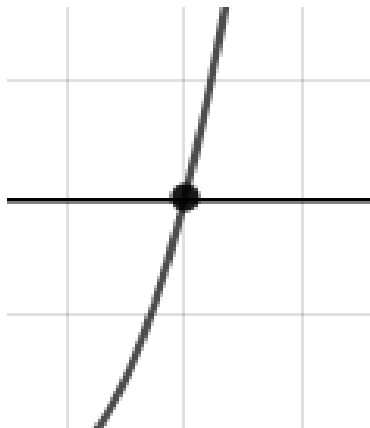
B.



C.



D.

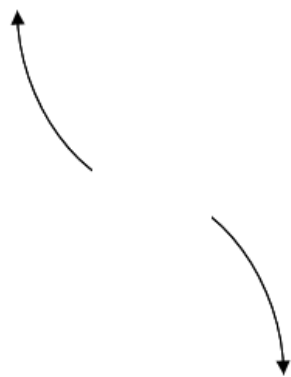


E. None of the above.

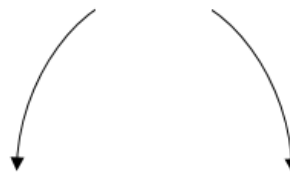
5. Describe the end behavior of the polynomial below.

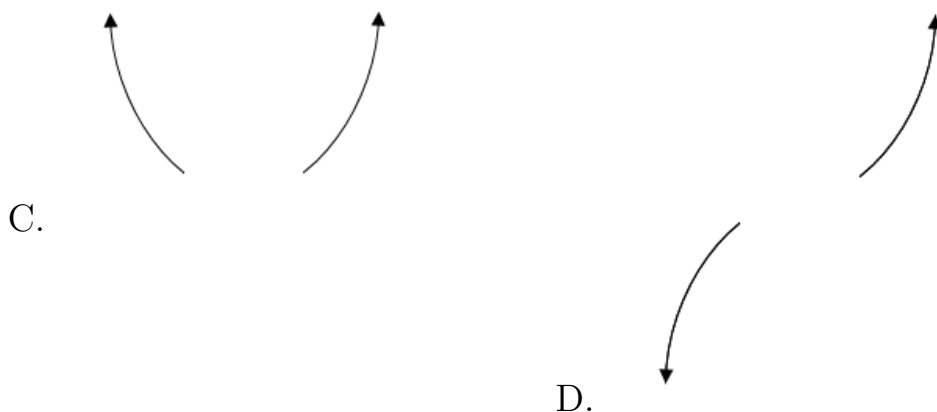
$$f(x) = 4(x + 7)^2(x - 7)^5(x - 6)^2(x + 6)^4$$

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

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

- A. $b \in [1, 4], c \in [0, 11], \text{ and } d \in [12, 13]$
- B. $b \in [1, 4], c \in [-4, 2], \text{ and } d \in [-16, -4]$
- C. $b \in [6, 13], c \in [54, 60], \text{ and } d \in [89, 97]$
- D. $b \in [-13, -8], c \in [54, 60], \text{ and } d \in [-97, -90]$
- E. None of the above.

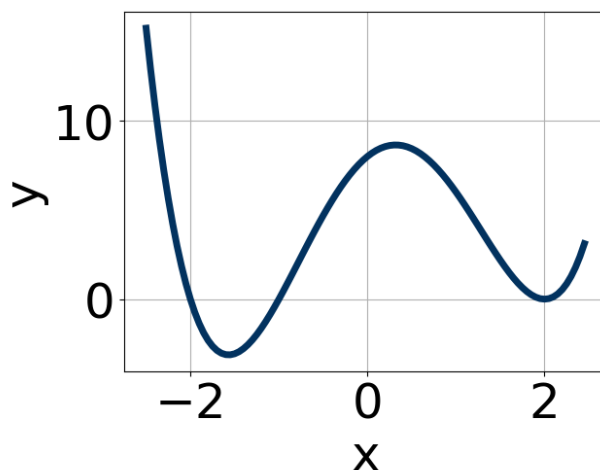
7. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

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

- A. $b \in [0.3, 1.4], c \in [1.4, 6.2], \text{ and } d \in [-12, -6]$
- B. $b \in [-7.4, -2], c \in [-12.6, -9.7], \text{ and } d \in [79, 85]$
- C. $b \in [3.9, 6.7], c \in [-12.6, -9.7], \text{ and } d \in [-83, -73]$

- D. $b \in [0.3, 1.4]$, $c \in [-0.1, 0.9]$, and $d \in [-23, -9]$
- E. None of the above.

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



- A. $15(x - 2)^7(x + 1)^6(x + 2)^9$
- B. $-15(x - 2)^6(x + 1)^5(x + 2)^{11}$
- C. $11(x - 2)^4(x + 1)^8(x + 2)^{11}$
- D. $-18(x - 2)^4(x + 1)^{11}(x + 2)^{10}$
- E. $6(x - 2)^4(x + 1)^{11}(x + 2)^7$

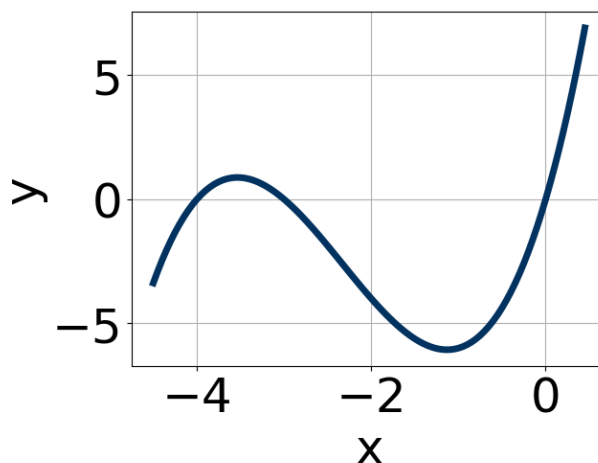
9. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

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

- A. $a \in [15, 17]$, $b \in [-14, -5]$, $c \in [-84, -73]$, and $d \in [-50, -47]$
- B. $a \in [15, 17]$, $b \in [6, 16]$, $c \in [-84, -73]$, and $d \in [-50, -47]$
- C. $a \in [15, 17]$, $b \in [52, 62]$, $c \in [5, 13]$, and $d \in [-50, -47]$
- D. $a \in [15, 17]$, $b \in [-41, -33]$, $c \in [-42, -35]$, and $d \in [43, 55]$

E. $a \in [15, 17]$, $b \in [6, 16]$, $c \in [-84, -73]$, and $d \in [43, 55]$

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



- A. $7x^9(x+4)^{11}(x+3)^{11}$
B. $11x^9(x+4)^6(x+3)^7$
C. $-17x^{11}(x+4)^8(x+3)^{11}$
D. $-15x^5(x+4)^9(x+3)^5$
E. $14x^{11}(x+4)^4(x+3)^4$
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