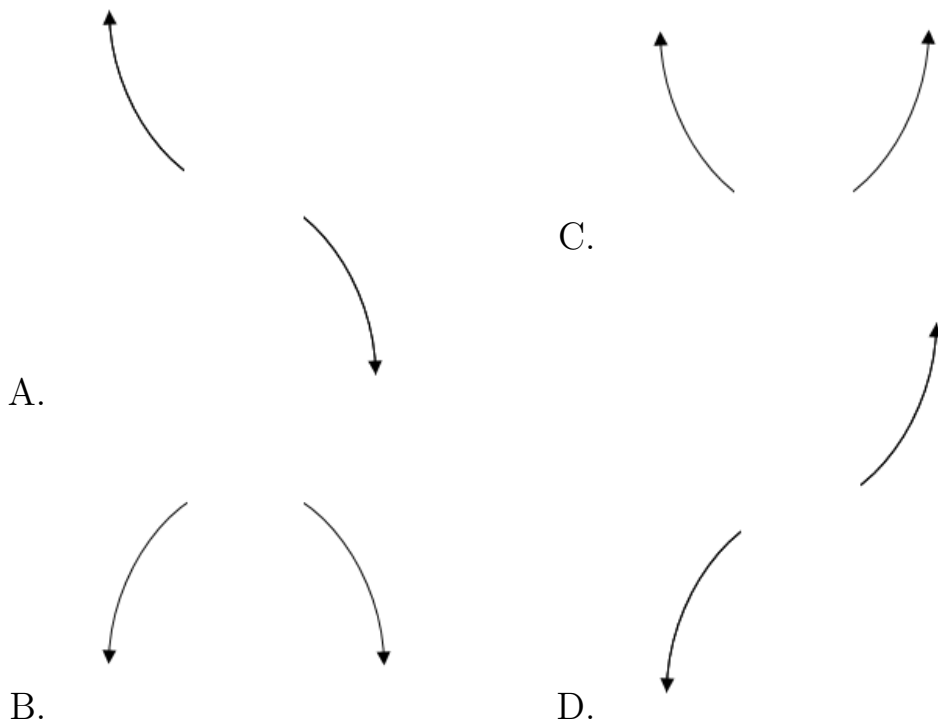


1. Describe the end behavior of the polynomial below.

$$f(x) = -3(x - 8)^2(x + 8)^5(x + 9)^3(x - 9)^3$$



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

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

- A. $a \in [40, 47], b \in [157, 164], c \in [98, 105],$ and $d \in [-78, -62]$
- B. $a \in [40, 47], b \in [10, 18], c \in [-187, -180],$ and $d \in [67, 80]$
- C. $a \in [40, 47], b \in [44, 51], c \in [-164, -157],$ and $d \in [-78, -62]$
- D. $a \in [40, 47], b \in [-162, -159], c \in [98, 105],$ and $d \in [67, 80]$
- E. $a \in [40, 47], b \in [-162, -159], c \in [98, 105],$ and $d \in [-78, -62]$

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

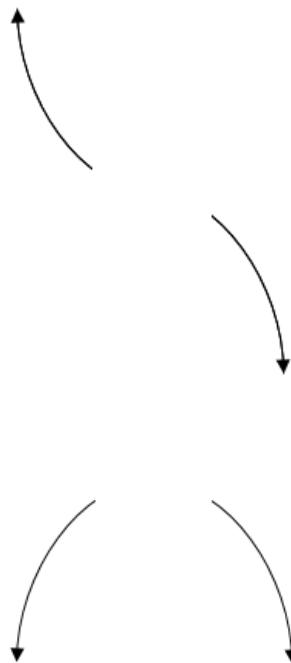
$$5 + 3i \text{ and } 1$$

- A. $b \in [-5, 2], c \in [-4, -1], \text{ and } d \in [2.3, 3.8]$
 B. $b \in [-21, -10], c \in [43, 45], \text{ and } d \in [-36.5, -33.9]$
 C. $b \in [9, 16], c \in [43, 45], \text{ and } d \in [33.9, 36.3]$
 D. $b \in [-5, 2], c \in [-9, -5], \text{ and } d \in [4.4, 5.8]$
 E. None of the above.

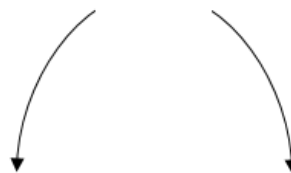
4. Describe the end behavior of the polynomial below.

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

A.



B.



C.

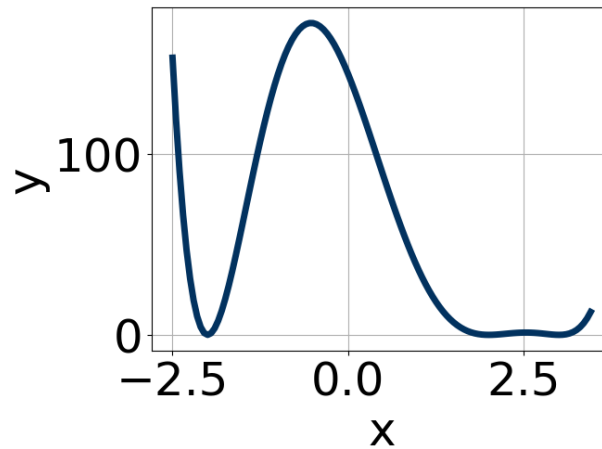


D.



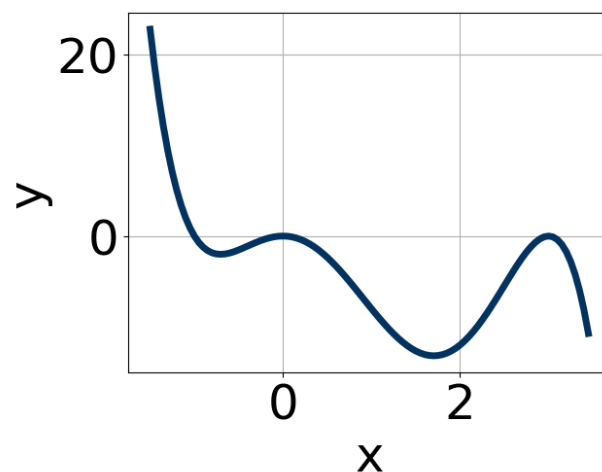
E. None of the above.

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



- A. $-14(x - 2)^6(x + 2)^8(x - 3)^6$
- B. $20(x - 2)^{10}(x + 2)^8(x - 3)^6$
- C. $-5(x - 2)^{10}(x + 2)^{10}(x - 3)^5$
- D. $4(x - 2)^8(x + 2)^6(x - 3)^5$
- E. $9(x - 2)^8(x + 2)^{11}(x - 3)^5$

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



- A. $6x^4(x - 3)^{10}(x + 1)^4$
- B. $9x^{10}(x - 3)^6(x + 1)^{11}$

- C. $-5x^8(x-3)^8(x+1)^9$
 D. $-19x^7(x-3)^6(x+1)^6$
 E. $-10x^{11}(x-3)^4(x+1)^9$

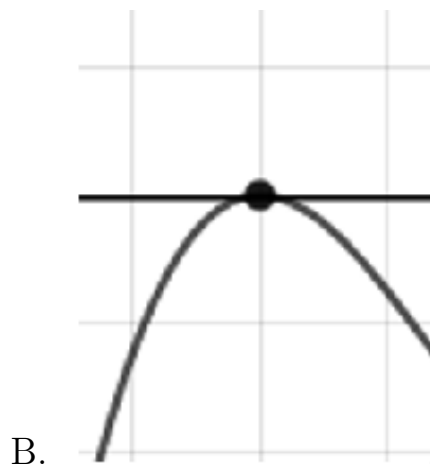
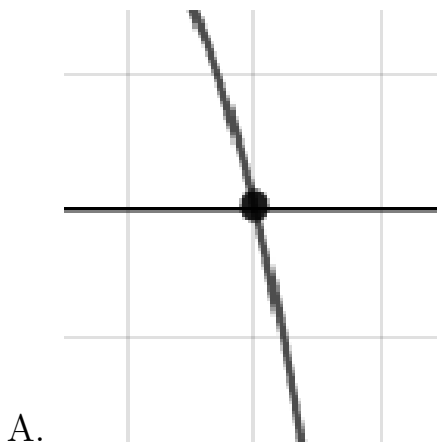
7. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

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

- A. $a \in [4, 9], b \in [-45, -40], c \in [95, 103], \text{ and } d \in [-73, -67]$
 B. $a \in [4, 9], b \in [22, 34], c \in [-8, 8], \text{ and } d \in [-73, -67]$
 C. $a \in [4, 9], b \in [-34, -27], c \in [-8, 8], \text{ and } d \in [70, 73]$
 D. $a \in [4, 9], b \in [5, 9], c \in [-74, -67], \text{ and } d \in [70, 73]$
 E. $a \in [4, 9], b \in [-34, -27], c \in [-8, 8], \text{ and } d \in [-73, -67]$

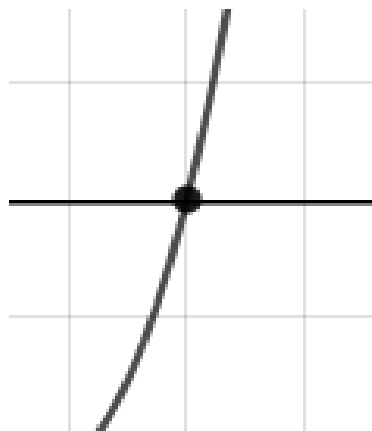
8. Describe the zero behavior of the zero $x = 9$ of the polynomial below.

$$f(x) = 9(x+9)^6(x-9)^9(x-3)^5(x+3)^7$$





C.



D.

E. None of the above.

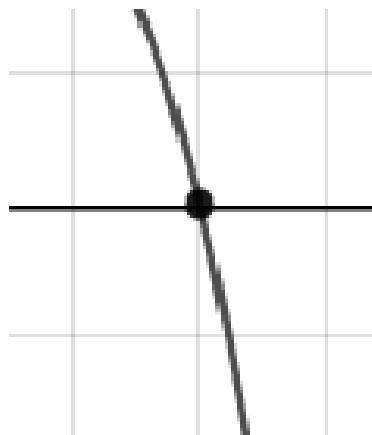
9. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

$$2 + 5i \text{ and } 3$$

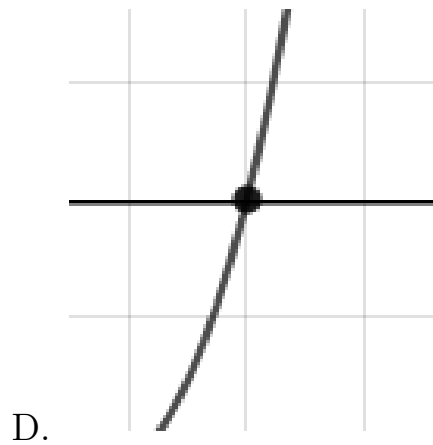
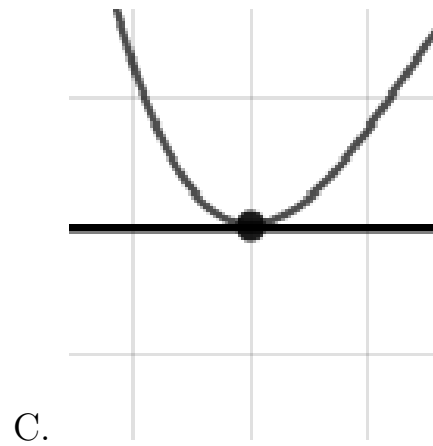
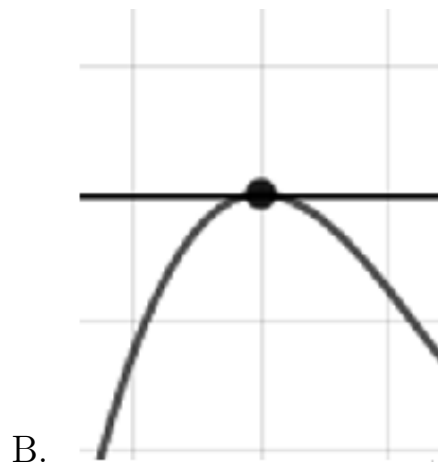
- A. $b \in [1, 2], c \in [-9.1, -7.3]$, and $d \in [10, 22]$
 B. $b \in [-7, -4], c \in [40.5, 41.2]$, and $d \in [-93, -85]$
 C. $b \in [1, 2], c \in [-5.6, -1.6]$, and $d \in [3, 7]$
 D. $b \in [6, 14], c \in [40.5, 41.2]$, and $d \in [87, 89]$
 E. None of the above.

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

$$f(x) = 2(x - 9)^{13}(x + 9)^9(x - 7)^7(x + 7)^4$$



A.



E. None of the above.