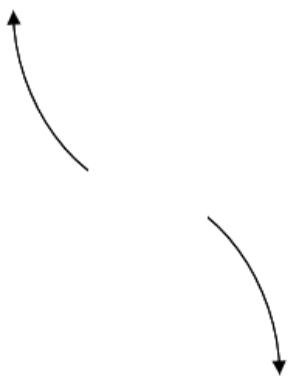
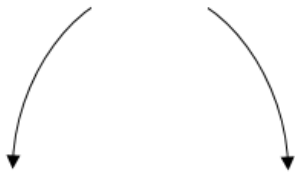
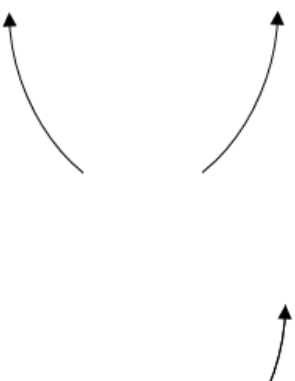



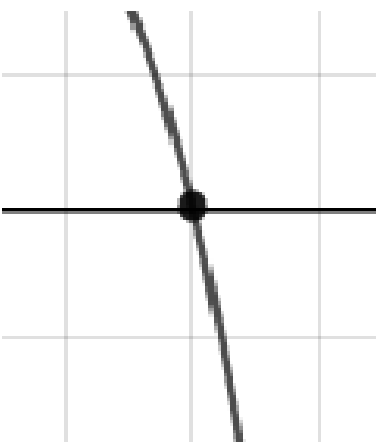
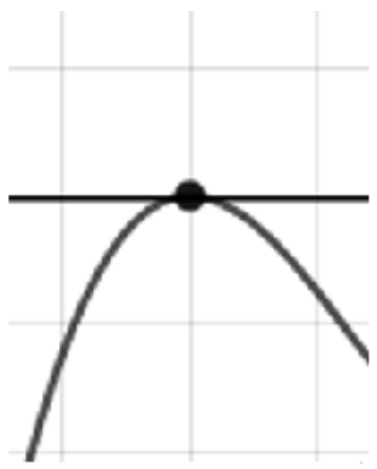
1. Describe the end behavior of the polynomial below.

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

- A. 
- B. 
- C. 
- D. 
- E. None of the above.

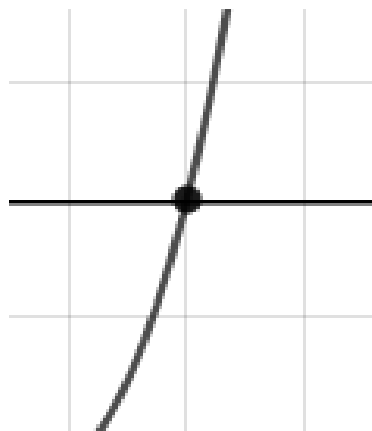
2. Describe the zero behavior of the zero $x = 8$ of the polynomial below.

$$f(x) = 8(x + 8)^7(x - 8)^{12}(x - 4)^4(x + 4)^8$$

- A. 
- B. 



C.



D.

E. None of the above.

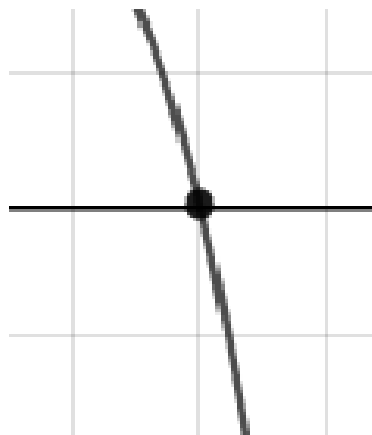
3. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

$-4 + 2i$ and 1

- A. $b \in [5, 17]$, $c \in [12, 13]$, and $d \in [-24, -17]$
 B. $b \in [-6, 2]$, $c \in [-2, 6]$, and $d \in [-5, -2]$
 C. $b \in [-13, -1]$, $c \in [12, 13]$, and $d \in [19, 24]$
 D. $b \in [-6, 2]$, $c \in [-4, 0]$, and $d \in [-1, 7]$
 E. None of the above.

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

$$f(x) = 6(x + 4)^{12}(x - 4)^9(x - 5)^5(x + 5)^2$$



A.

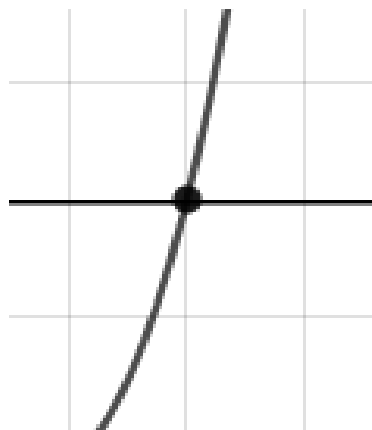
B.



C.

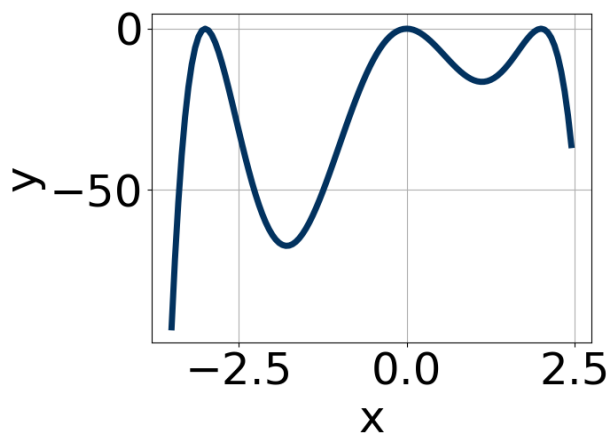


D.



E. None of the above.

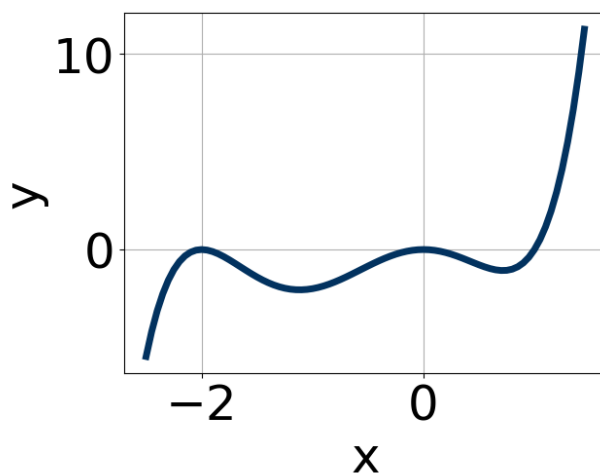
5. Which of the following equations *could* be of the graph presented below?



A. $16x^{10}(x + 3)^{10}(x - 2)^5$

- B. $-8x^9(x+3)^8(x-2)^5$
- C. $-19x^4(x+3)^{10}(x-2)^{11}$
- D. $5x^{10}(x+3)^{10}(x-2)^4$
- E. $-12x^6(x+3)^6(x-2)^{10}$

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

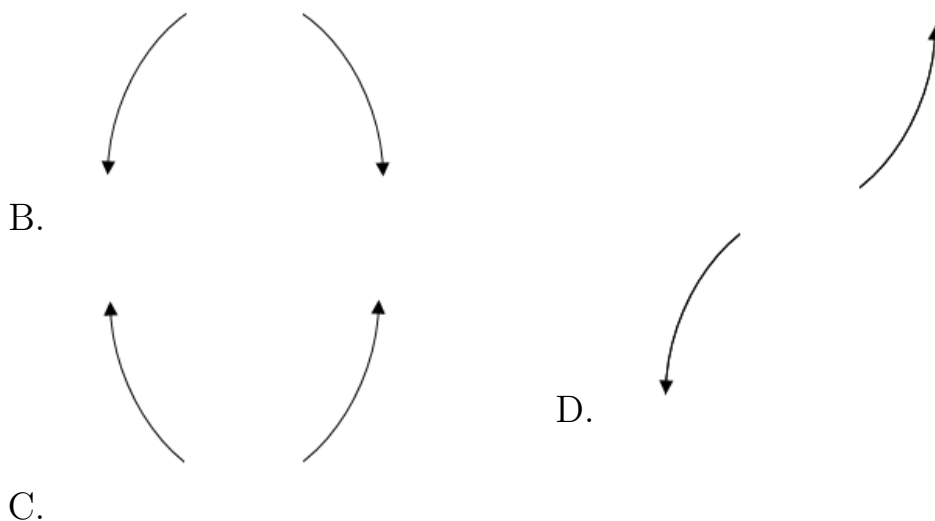


- A. $2x^4(x+2)^6(x-1)^7$
- B. $-20x^6(x+2)^8(x-1)^7$
- C. $-20x^{10}(x+2)^6(x-1)^4$
- D. $9x^5(x+2)^8(x-1)^9$
- E. $14x^5(x+2)^4(x-1)^8$

7. Describe the end behavior of the polynomial below.

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





E. None of the above.

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

$$\frac{2}{5}, \frac{1}{5}, \text{ and } 5$$

- A. $a \in [20, 28], b \in [-140, -132], c \in [71, 78],$ and $d \in [-17, -9]$
- B. $a \in [20, 28], b \in [-111, -108], c \in [-73, -71],$ and $d \in [-17, -9]$
- C. $a \in [20, 28], b \in [-140, -132], c \in [71, 78],$ and $d \in [3, 13]$
- D. $a \in [20, 28], b \in [137, 143], c \in [71, 78],$ and $d \in [3, 13]$
- E. $a \in [20, 28], b \in [-120, -116], c \in [-29, -19],$ and $d \in [3, 13]$

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

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

- A. $b \in [4, 22], c \in [68, 74],$ and $d \in [92, 107]$

- B. $b \in [-1, 10]$, $c \in [2, 12]$, and $d \in [9, 19]$
C. $b \in [-1, 10]$, $c \in [-3, -1]$, and $d \in [-13, -9]$
D. $b \in [-13, -3]$, $c \in [68, 74]$, and $d \in [-102, -96]$
E. None of the above.
-

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

$$\frac{3}{4}, -4, \text{ and } \frac{-2}{3}$$

- A. $a \in [10, 16]$, $b \in [-35, -30]$, $c \in [-67, -55]$, and $d \in [-26, -22]$
B. $a \in [10, 16]$, $b \in [41, 52]$, $c \in [-10, -6]$, and $d \in [24, 25]$
C. $a \in [10, 16]$, $b \in [-48, -40]$, $c \in [-10, -6]$, and $d \in [24, 25]$
D. $a \in [10, 16]$, $b \in [64, 69]$, $c \in [72, 82]$, and $d \in [24, 25]$
E. $a \in [10, 16]$, $b \in [41, 52]$, $c \in [-10, -6]$, and $d \in [-26, -22]$
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