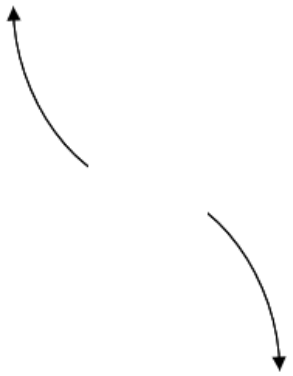
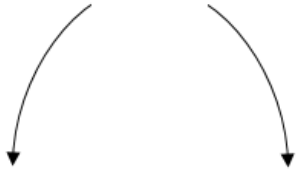
1. Describe the end behavior of the polynomial below.

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

A.

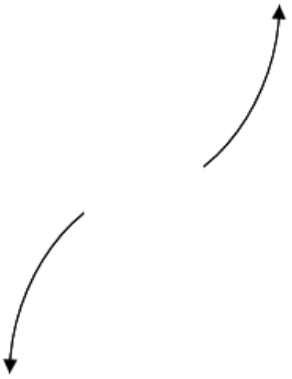


B.



C.

D.



E. None of the above.

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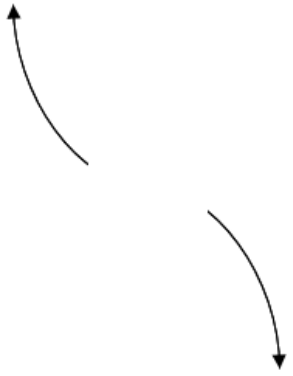
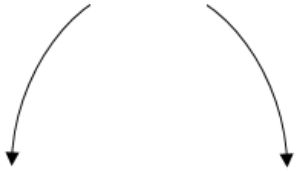
2. Describe the end behavior of the polynomial below.

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

A.

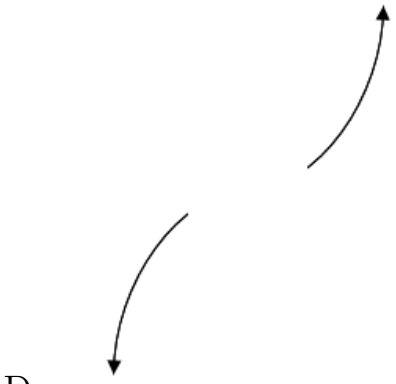


B.



C.

D.



E. None of the above.

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

$$\frac{-7}{4}, 3, \text{ and } \frac{-1}{3}$$

A. $a \in [11, 19], b \in [-11, -6], c \in [-71, -67],$ and $d \in [-22, -17]$

B. $a \in [11, 19], b \in [-63, -49], c \in [42, 47],$ and $d \in [9, 23]$

C. $a \in [11, 19], b \in [18, 26], c \in [-61, -54],$ and $d \in [-22, -17]$

D. $a \in [11, 19], b \in [-11, -6], c \in [-71, -67],$ and $d \in [9, 23]$

E. $a \in [11, 19], b \in [7, 17], c \in [-71, -67],$ and $d \in [9, 23]$

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

$$-3 - 2i \text{ and } -4$$

A. $b \in [6, 17], c \in [35.32, 37.41],$ and $d \in [48.7, 52.2]$

B. $b \in [-6, 4], c \in [6.42, 8.44],$ and $d \in [10.6, 15.5]$

C. $b \in [-11, -5], c \in [35.32, 37.41],$ and $d \in [-52.5, -50.6]$

D. $b \in [-6, 4], c \in [5.93, 6.06]$, and $d \in [6.6, 10.2]$

E. None of the above.

---

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

$$\frac{1}{4}, 4, \text{ and } 7$$

A. $a \in [2, 5], b \in [-47.3, -43.3], c \in [123, 132]$, and $d \in [23, 29]$

B. $a \in [2, 5], b \in [-12.4, -9.4], c \in [-115, -111]$, and $d \in [-31, -19]$

C. $a \in [2, 5], b \in [-47.3, -43.3], c \in [123, 132]$, and $d \in [-31, -19]$

D. $a \in [2, 5], b \in [43.4, 45.2], c \in [123, 132]$, and $d \in [23, 29]$

E. $a \in [2, 5], b \in [-43.9, -40.8], c \in [100, 102]$, and $d \in [23, 29]$

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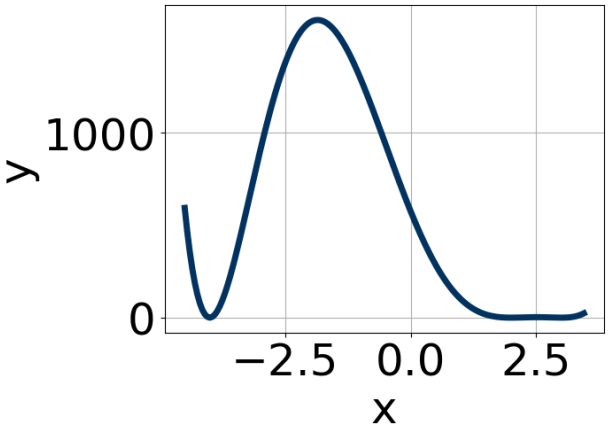
6. Which of the following equations *could* be of the graph presented below?



A. $4(x-2)^6(x+4)^4(x-3)^6$

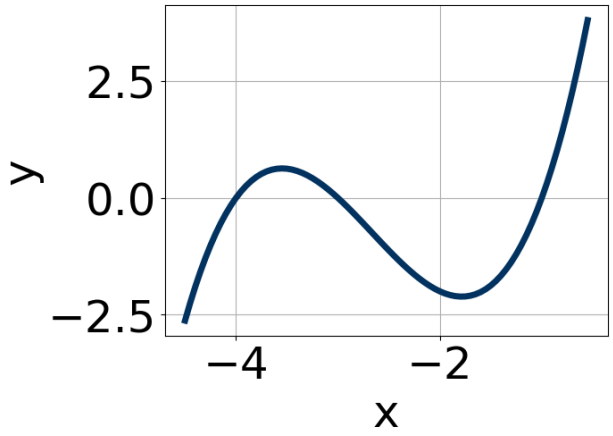
B. $-12(x-2)^8(x+4)^6(x-3)^7$

C. $14(x-2)^8(x+4)^8(x-3)^{11}$

D. $-4(x-2)^4(x+4)^4(x-3)^8$

E. $18(x-2)^6(x+4)^{11}(x-3)^9$

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



A. $-17(x+4)^9(x+1)^{11}(x+3)^5$

B. $20(x+4)^{11}(x+1)^{11}(x+3)^{11}$

C. $16(x+4)^{10}(x+1)^4(x+3)^7$

D. $2(x+4)^6(x+1)^5(x+3)^9$

E. $-5(x+4)^4(x+1)^5(x+3)^{11}$

8. 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. $b \in [-6, 5], c \in [-9, -3],$ and $d \in [-8, -4.4]$

B. $b \in [-6, 5], c \in [-3, 5],$ and $d \in [-4.4, -2.5]$

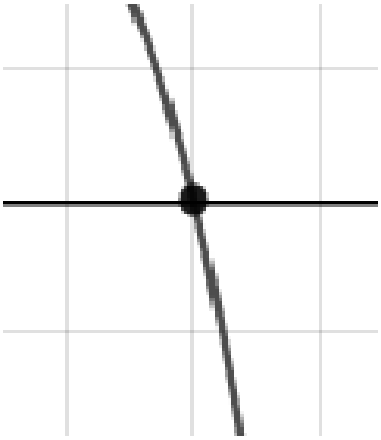
C. $b \in [8, 12], c \in [20, 27],$ and $d \in [-36.8, -29.5]$

D. $b \in [-16, -5], c \in [20, 27],$ and $d \in [31.3, 34.5]$

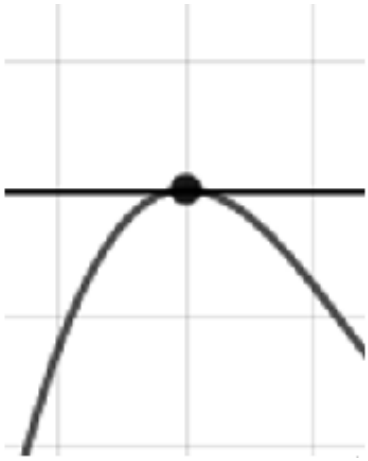
E. None of the above.

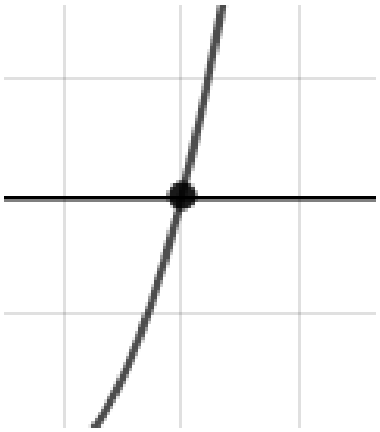
9. Describe the zero behavior of the zero $x = -7$ of the polynomial below.

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

A. 

C. 

B. 

D. 

E. None of the above.

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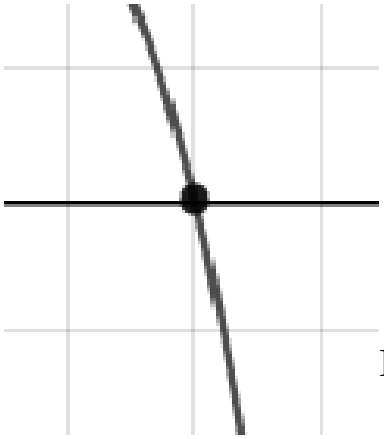
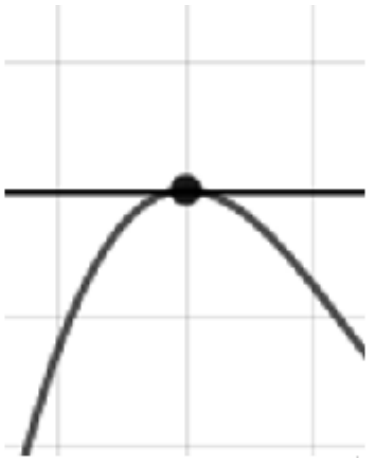
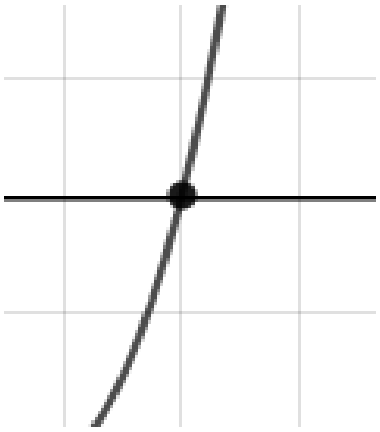
10. Describe the zero behavior of the zero $x = -3$ of the polynomial below.

$$f(x) = 5(x-3)^7(x+3)^{10}(x+6)^4(x-6)^8$$

A. 

B. 

C. 

D. 

E. None of the above.
