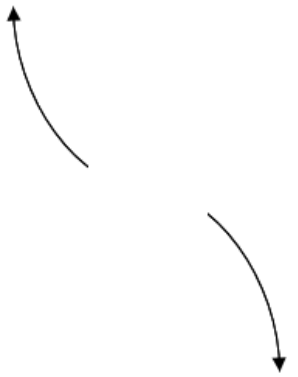
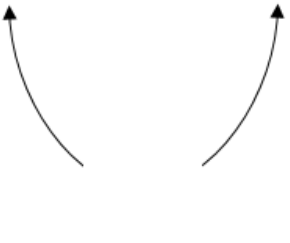
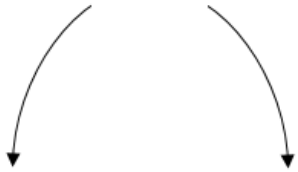
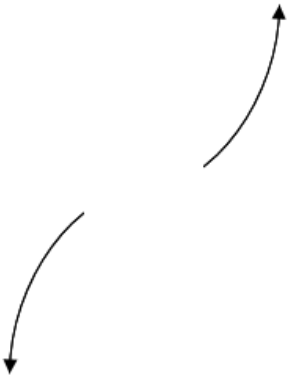
1. Describe the end behavior of the polynomial below.

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

A.


C.


B.


D.


E. None of the above.

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

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

A. $b \in [0, 3.1], c \in [-11, 2],$ and $d \in [-8, 1]$

B. $b \in [1.1, 5.6], c \in [20, 29],$ and $d \in [-35, -31]$

C. $b \in [-5.2, -3], c \in [20, 29],$ and $d \in [31, 38]$

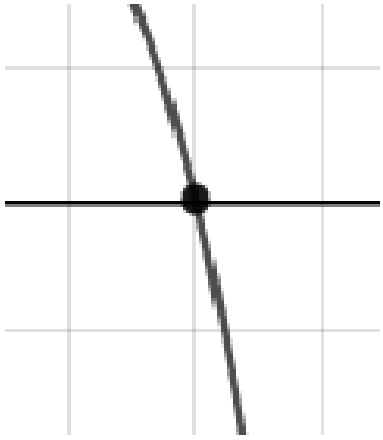
D. $b \in [0, 3.1], c \in [1, 9],$ and $d \in [0, 8]$

E. None of the above.

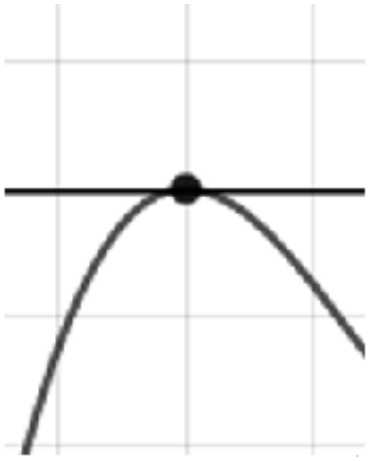
---

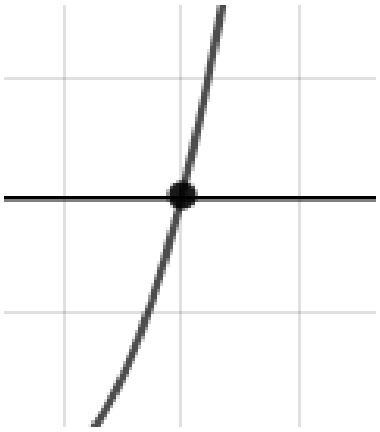
3. Describe the zero behavior of the zero $x = 9$ of the polynomial below.

$$f(x) = 8(x+9)^5(x-9)^{10}(x-8)^8(x+8)^{12}$$

A. 

C. 

B. 

D. 

E. None of the above.

---

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

$$1, \frac{-3}{4}, \text{ and } \frac{-5}{3}$$

A. $a \in [12, 19], b \in [14.9, 17.6], c \in [-25, -7],$ and $d \in [10, 23]$

B. $a \in [12, 19], b \in [22.9, 25], c \in [-9, -3],$ and $d \in [-15, -12]$

C. $a \in [12, 19], b \in [-19.1, -15.4], c \in [-25, -7],$ and $d \in [10, 23]$

D. $a \in [12, 19], b \in [14.9, 17.6], c \in [-25, -7]$, and $d \in [-15, -12]$

E. $a \in [12, 19], b \in [40.2, 44], c \in [38, 47]$, and $d \in [10, 23]$

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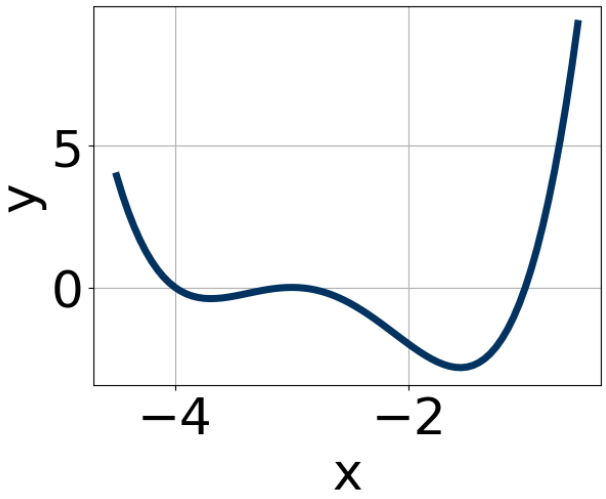
5. Which of the following equations *could* be of the graph presented below?



A. $16(x+3)^5(x+1)^6(x+4)^{11}$

B. $19(x+3)^6(x+1)^{10}(x+4)^7$

C. $2(x+3)^8(x+1)^7(x+4)^5$

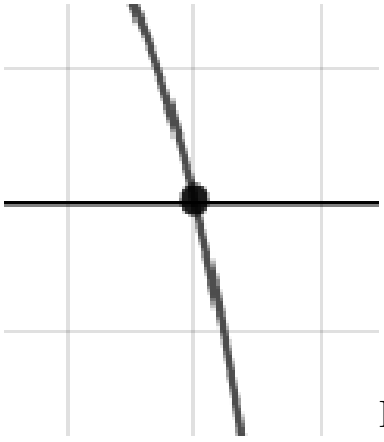
D. $-3(x+3)^8(x+1)^9(x+4)^{10}$

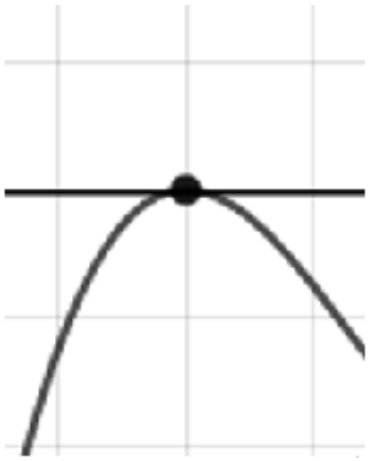
E. $-20(x+3)^4(x+1)^{11}(x+4)^9$

---

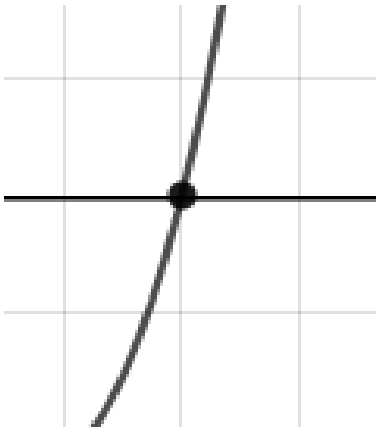
6. Describe the zero behavior of the zero $x = -6$ of the polynomial below.

$$f(x) = 5(x-6)^5(x+6)^8(x-9)^9(x+9)^{11}$$

A. 

B. 

C. 

D. 

E. None of the above.

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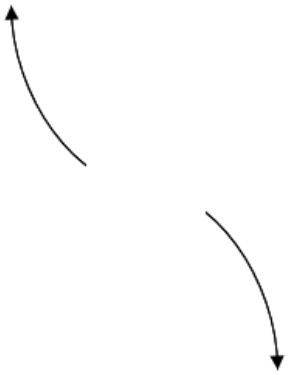
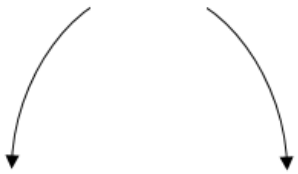
7. Describe the end behavior of the polynomial below.

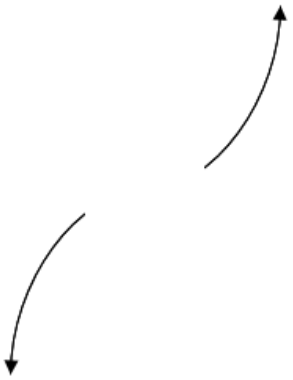
$$f(x) = 2(x+2)^2(x-2)^3(x+3)^3(x-3)^5$$

A. 

B. 

C.

D.



E. None of the above.

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

$$4 - 3i \text{ and } 1$$

A. $b \in [-2, 6], c \in [-1, 13],$ and $d \in [-5, -1]$

B. $b \in [-13, -8], c \in [31, 36],$ and $d \in [-26, -23]$

C. $b \in [8, 11], c \in [31, 36],$ and $d \in [25, 31]$

D. $b \in [-2, 6], c \in [-10, -1],$ and $d \in [0, 5]$

E. None of the above.

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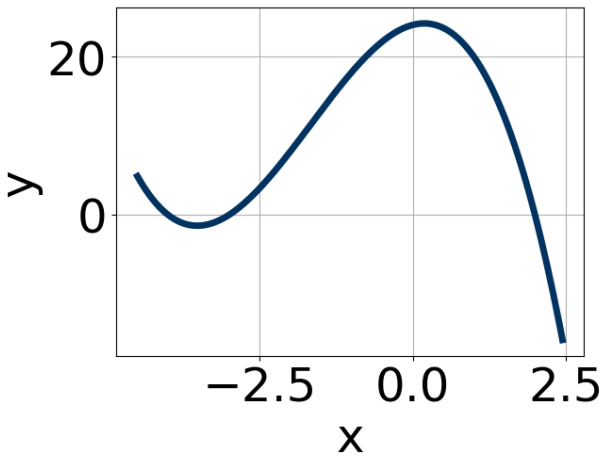
9. Which of the following equations *could* be of the graph presented below?



A. $-3(x+3)^8(x+4)^6(x-2)^{11}$

B. $16(x+3)^{10}(x+4)^{11}(x-2)^7$

C. $-11(x+3)^{11}(x+4)^9(x-2)^5$

D. $2(x+3)^{11}(x+4)^{11}(x-2)^9$

E. $-9(x+3)^4(x+4)^7(x-2)^{11}$

---

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.

$$3, 4, \text{ and } \frac{-1}{2}$$

A. $a \in [-4,5], b \in [14,19], c \in [26,35],$ and $d \in [7,17]$

B. $a \in [-4,5], b \in [-21,-10], c \in [11,26],$ and $d \in [-12,-10]$

C. $a \in [-4,5], b \in [-4,10], c \in [-27,-20],$ and $d \in [-12,-10]$

D. $a \in [-4,5], b \in [-21,-10], c \in [11,26],$ and $d \in [7,17]$

E. $a \in [-4,5], b \in [9,14], c \in [11,26],$ and $d \in [-12,-10]$
