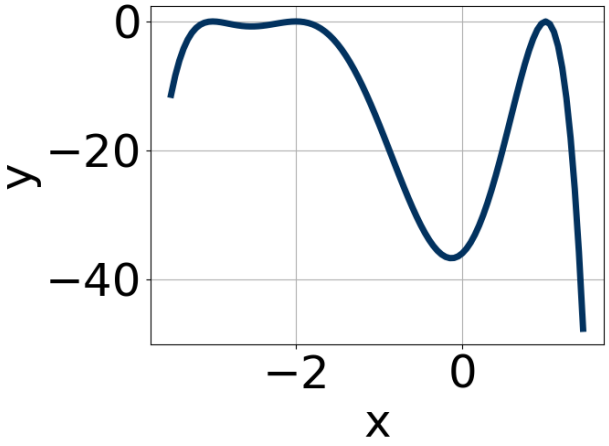
1. Which of the following equations *could* be of the graph presented below?



A. $-5(x+2)^6(x-1)^8(x+3)^{11}$

B. $12(x+2)^6(x-1)^{10}(x+3)^5$

C. $7(x+2)^{10}(x-1)^{10}(x+3)^8$

D. $-7(x+2)^6(x-1)^7(x+3)^7$

E. $-5(x+2)^6(x-1)^4(x+3)^{10}$

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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.

$$2+5i \text{ and } -4$$

A. $b \in [0.16, 1.34], c \in [0, 5],$ and $d \in [-9, -3]$

B. $b \in [-1.51, 0.14], c \in [4, 21],$ and $d \in [-119, -107]$

C. $b \in [-1.51, 0.14], c \in [4, 21],$ and $d \in [112, 121]$

D. $b \in [0.16, 1.34], c \in [-2, 0],$ and $d \in [-20, -14]$

E. None of the above.

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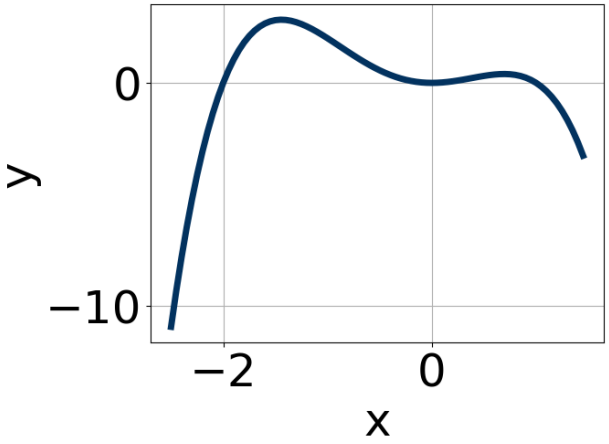
3. Which of the following equations *could* be of the graph presented below?



A. $-16x^{10}(x+2)^5(x-1)^5$

B. $-14x^{10}(x+2)^8(x-1)^7$

C. $-15x^5(x+2)^4(x-1)^9$

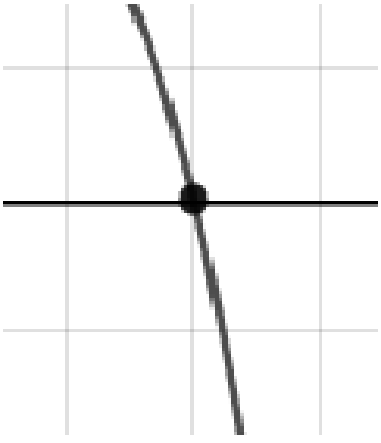
D. $8x^4(x+2)^{11}(x-1)^8$

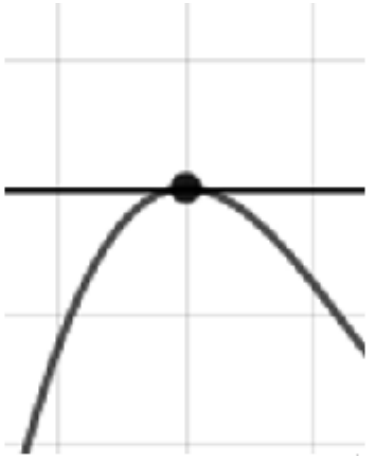
E. $2x^4(x+2)^5(x-1)^{11}$

---

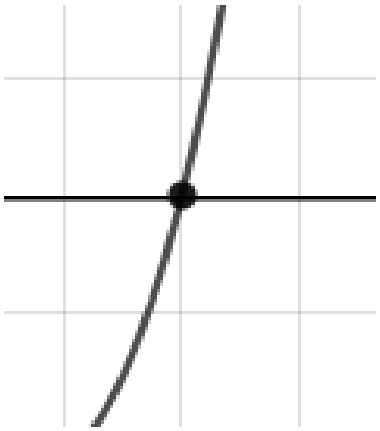
4. Describe the zero behavior of the zero $x = -3$ of the polynomial below.

$$f(x) = -3(x+3)^2(x-3)^5(x+4)^9(x-4)^{10}$$

A. 

B. 

C. 

D. 

E. None of the above.

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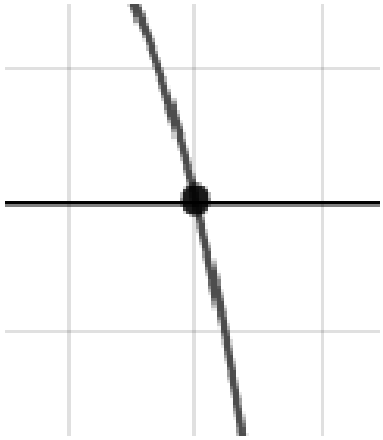
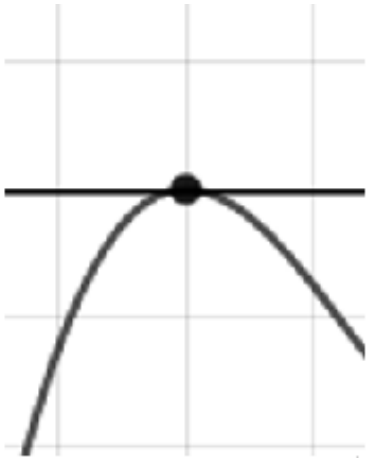
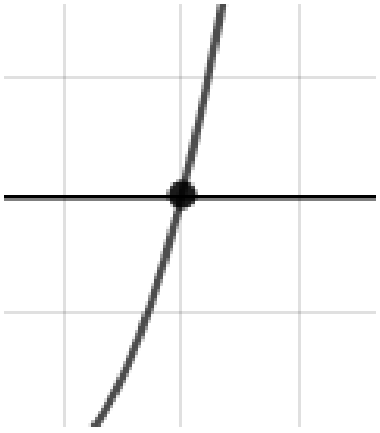
5. Describe the zero behavior of the zero $x = 5$ of the polynomial below.

$$f(x) = 9(x+5)^5(x-5)^{10}(x+7)^9(x-7)^{12}$$

A. 

C. 

B. 

D. 

E. None of the above.

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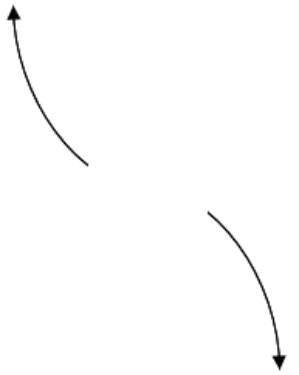
6. Describe the end behavior of the polynomial below.

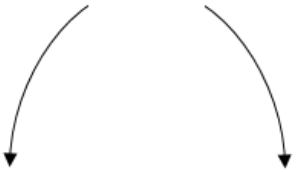
$$f(x) = 9(x-4)^4(x+4)^9(x-6)^4(x+6)^4$$

A.

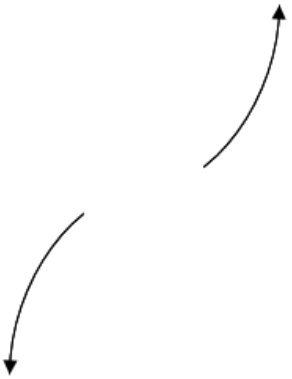


C.

B.



D.



E. None of the above.

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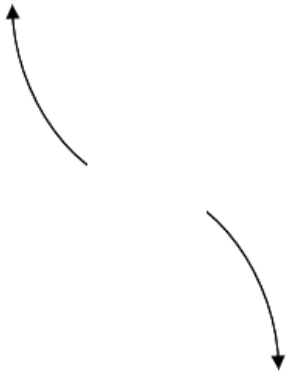
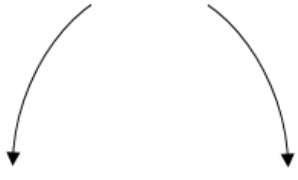
7. Describe the end behavior of the polynomial below.

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

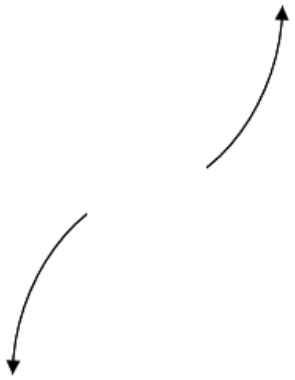
A.



B.



D.



C.

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

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

A. $a \in [74, 76], b \in [58, 66], c \in [-12, -2],$ and $d \in [-18, -4]$

B. $a \in [74, 76], b \in [-36, -34], c \in [-30, -26],$ and $d \in [12, 17]$

C. $a \in [74, 76], b \in [-70, -60], c \in [-12, -2],$ and $d \in [12, 17]$

D. $a \in [74, 76], b \in [-129, -119], c \in [61, 70],$ and $d \in [-18, -4]$

E. $a \in [74, 76], b \in [-70, -60], c \in [-12, -2],$ and $d \in [-18, -4]$

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

$$\frac{-7}{5}, \frac{3}{4}, \text{ and } \frac{-3}{2}$$

A. $a \in [40, 44], b \in [-92, -83], c \in [-5, 1],$ and $d \in [59, 64]$

B. $a \in [40, 44], b \in [85, 87], c \in [-5, 1],$ and $d \in [-67, -58]$

C. $a \in [40, 44], b \in [30, 40], c \in [-84, -78],$ and $d \in [-67, -58]$

D. $a \in [40, 44], b \in [-27, -22], c \in [-87, -82],$ and $d \in [59, 64]$

E. $a \in [40, 44], b \in [85, 87], c \in [-5, 1],$ and $d \in [59, 64]$

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

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

A. $b \in [-14, -5], c \in [51, 58],$ and $d \in [-109, -97]$

B. $b \in [4, 16], c \in [51, 58],$ and $d \in [99, 103]$

C. $b \in [-1, 4], c \in [1, 3],$ and $d \in [-17, -10]$

D. $b \in [-1, 4], c \in [-19, -3],$ and $d \in [5, 11]$

E. None of the above.
