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

$$-4 + 5i \text{ and } -3$$

A. $b \in [-14, -10], c \in [63, 72],$ and $d \in [-129, -116]$

B. $b \in [7, 14], c \in [63, 72],$ and $d \in [119, 125]$

C. $b \in [1, 9], c \in [-5, 1],$ and $d \in [-24, -14]$

D. $b \in [1, 9], c \in [4, 13],$ and $d \in [11, 20]$

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

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

A. $a \in [3, 9], b \in [3, 13], c \in [-51, -46],$ and $d \in [-70, -67]$

B. $a \in [3, 9], b \in [48, 52], c \in [97, 108],$ and $d \in [68, 74]$

C. $a \in [3, 9], b \in [48, 52], c \in [97, 108],$ and $d \in [-70, -67]$

D. $a \in [3, 9], b \in [-60, -47], c \in [97, 108],$ and $d \in [-70, -67]$

E. $a \in [3, 9], b \in [-23, -17], c \in [-33, -29],$ and $d \in [68, 74]$

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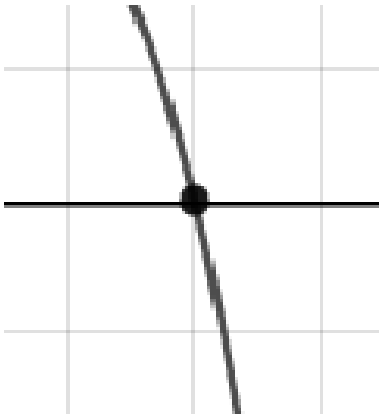
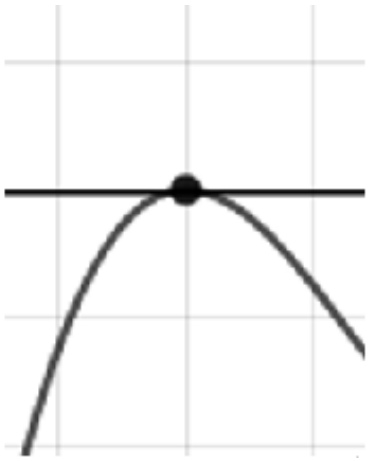
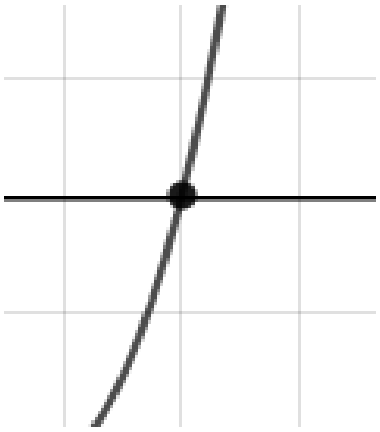
3. Describe the zero behavior of the zero $x = 5$ of the polynomial below.

$$f(x) = 2(x-7)^{10}(x+7)^8(x-5)^8(x+5)^3$$



B. 

C. 

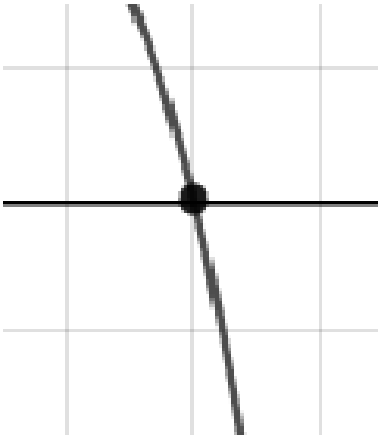
D. 

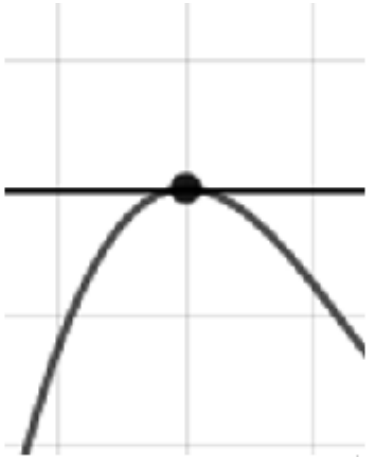
E. None of the above.

---

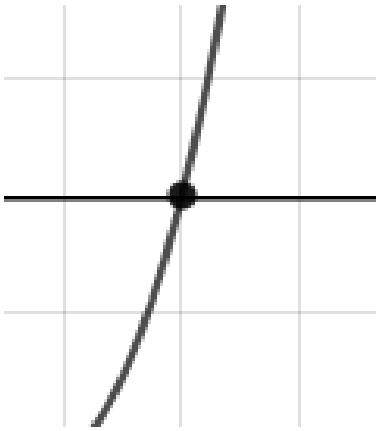
4. Describe the zero behavior of the zero $x = 5$ of the polynomial below.

$$f(x) = -4(x+4)^8(x-4)^7(x-5)^9(x+5)^4$$

A. 

B. 

C. 

D. 

E. None of the above.

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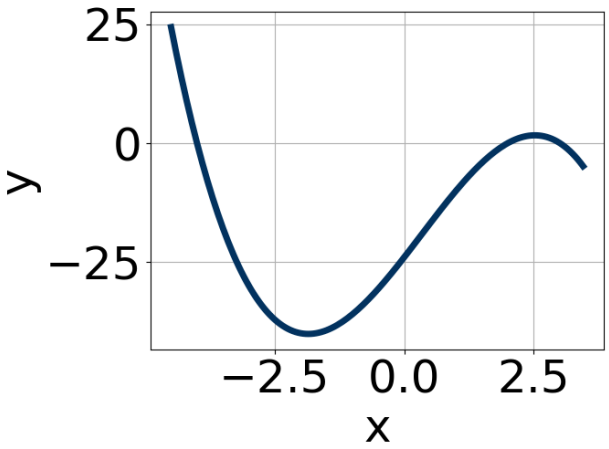
5. Which of the following equations *could* be of the graph presented below?



A. $6(x-3)^8(x-2)^7(x+4)^5$

B. $-9(x-3)^8(x-2)^{10}(x+4)^7$

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

D. $-5(x-3)^{10}(x-2)^7(x+4)^7$

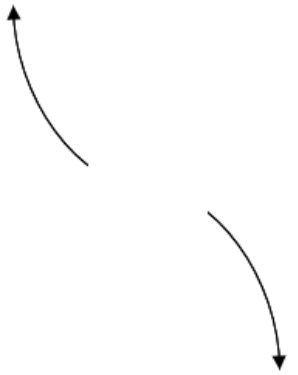
E. $19(x-3)^7(x-2)^9(x+4)^5$

---

6. Describe the end behavior of the polynomial below.

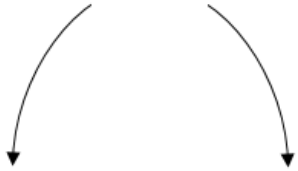
$$f(x) = 8(x+8)^2(x-8)^3(x+4)^5(x-4)^5$$

A.

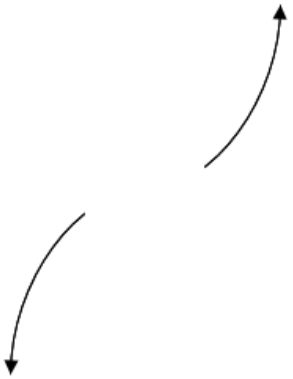


C.

B.



D.



E. None of the above.

---

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

$$3 - 5i \text{ and } -4$$

A. $b \in [0.96, 1.62], c \in [7.42, 9.73],$ and $d \in [17, 22]$

B. $b \in [-2.98, -1.83], c \in [9.75, 11.93],$ and $d \in [132, 142]$

C. $b \in [1.06, 2.5], c \in [9.75, 11.93],$ and $d \in [-137, -131]$

D. $b \in [0.96, 1.62], c \in [0.77, 1.03],$ and $d \in [-18, -5]$

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

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

A. $a \in [2, 7], b \in [-10, -1], c \in [-54, -35],$ and $d \in [-28, -21]$

B. $a \in [2, 7], b \in [-38, -29], c \in [54, 63],$ and $d \in [-28, -21]$

C. $a \in [2, 7], b \in [-38, -29], c \in [54, 63],$ and $d \in [19, 31]$

D. $a \in [2, 7], b \in [32, 34], c \in [54, 63],$ and $d \in [19, 31]$

E. $a \in [2, 7], b \in [-18, -8], c \in [-41, -31],$ and $d \in [19, 31]$

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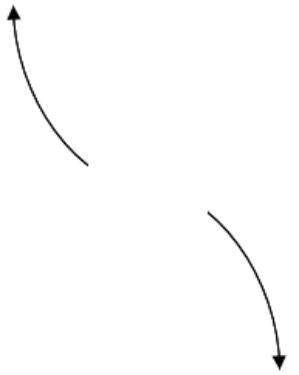
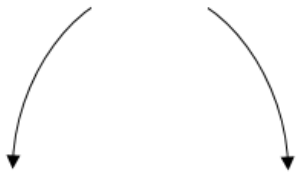
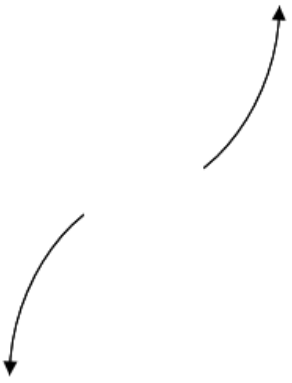
9. Describe the end behavior of the polynomial below.

$$f(x) = 4(x-6)^4(x+6)^7(x+8)^5(x-8)^5$$

A. 

C. 

B. 

D. 

E. None of the above.

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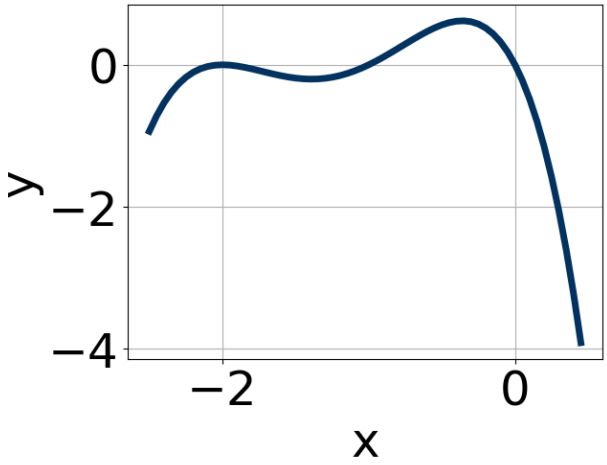
10. Which of the following equations *could* be of the graph presented below?



A. $-20x^9(x+2)^7(x+1)^{10}$

B. $14x^8(x+2)^8(x+1)^9$

C. $-19x^9(x+2)^4(x+1)^7$

D. $19x^5(x+2)^{10}(x+1)^5$

E. $-18x^7(x+2)^4(x+1)^{10}$