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

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

A. $b \in [-2.3, 4.4], c \in [-1.6, -0.93],$ and $d \in [-21.5, -18]$

B. $b \in [-8.4, -5.6], c \in [0.11, 1.85],$ and $d \in [163.6, 167.2]$

C. $b \in [3, 9.5], c \in [0.11, 1.85],$ and $d \in [-165.4, -158.5]$

D. $b \in [-2.3, 4.4], c \in [-0.84, 0.88],$ and $d \in [-17.4, -12]$

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

$$\frac{-1}{2}, \frac{-1}{4}, \text{ and } \frac{7}{5}$$

A. $a \in [35, 42], b \in [-88, -76], c \in [47, 56],$ and $d \in [-8, -2]$

B. $a \in [35, 42], b \in [-66, -63], c \in [4, 12],$ and $d \in [3, 13]$

C. $a \in [35, 42], b \in [20, 30], c \in [-38, -35],$ and $d \in [3, 13]$

D. $a \in [35, 42], b \in [-29, -24], c \in [-38, -35],$ and $d \in [3, 13]$

E. $a \in [35, 42], b \in [-29, -24], c \in [-38, -35],$ and $d \in [-8, -2]$

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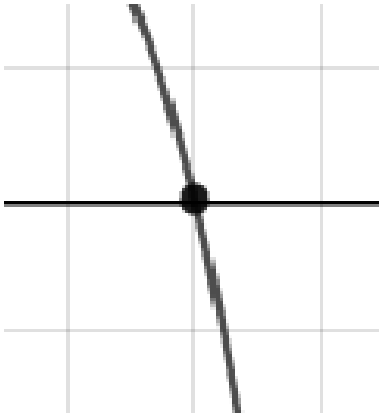
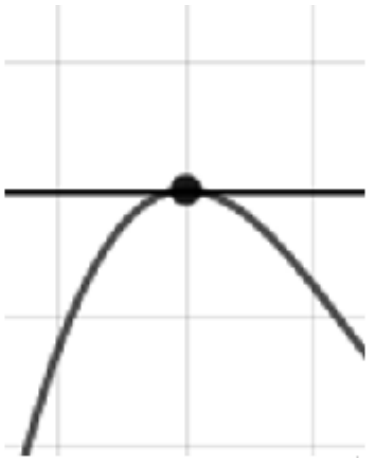
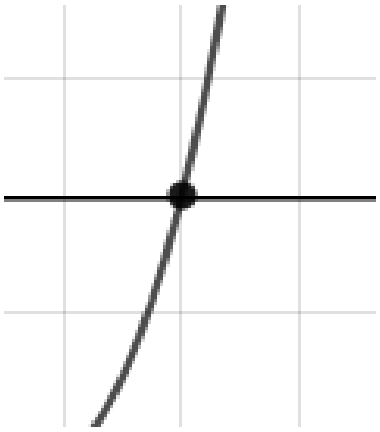
3. Describe the zero behavior of the zero $x = 8$ of the polynomial below.

$$f(x) = -7(x-2)^{10}(x+2)^6(x+8)^{11}(x-8)^6$$



B. 

C. 

D. 

E. None of the above.

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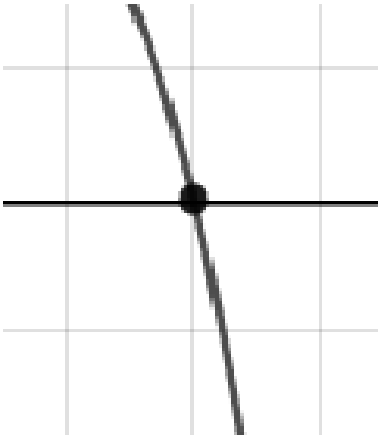
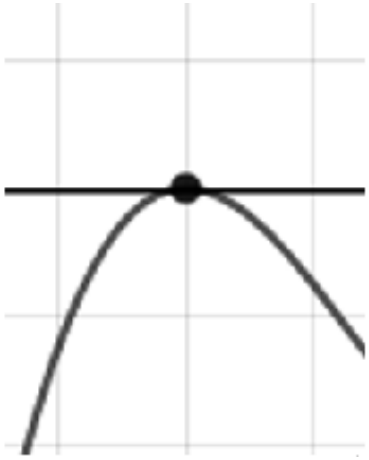
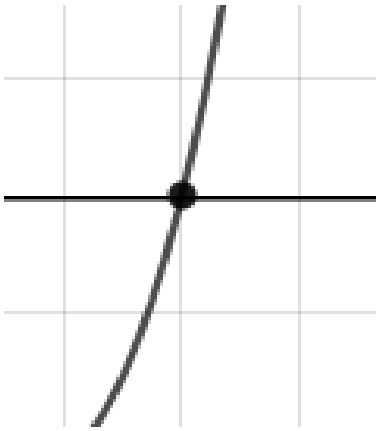
4. Describe the zero behavior of the zero $x = 8$ of the polynomial below.

$$f(x) = -9(x-5)^{12}(x+5)^{9}(x+8)^{10}(x-8)^{7}$$

A. 

B. 

C. 

D. 

E. None of the above.

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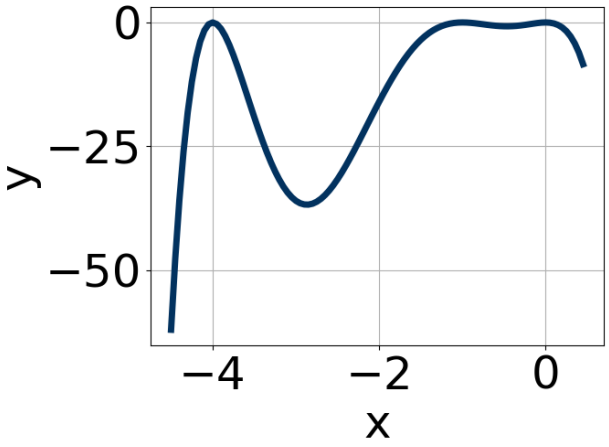
5. Which of the following equations *could* be of the graph presented below?



A. $-8x^7(x+4)^4(x+1)^{11}$

B. $-14x^{10}(x+4)^8(x+1)^9$

C. $-17x^4(x+4)^4(x+1)^6$

D. $14x^{10}(x+4)^6(x+1)^9$

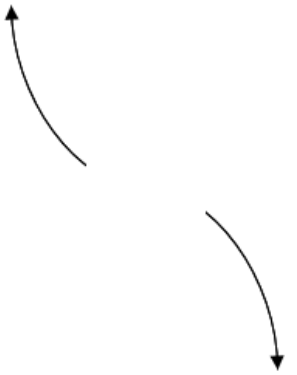
E. $13x^8(x+4)^{10}(x+1)^{10}$

---

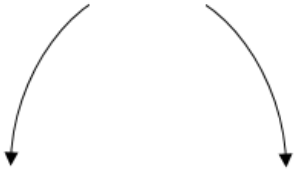
6. Describe the end behavior of the polynomial below.

$$f(x) = 5(x+3)^3(x-3)^8(x+7)^3(x-7)^5$$

A.

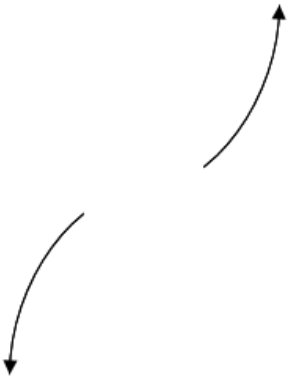


B.



C.

D.



E. None of the above.

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

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

A. $b \in [-8, -3], c \in [8.79, 9.4],$ and $d \in [160, 168]$

B. $b \in [-1, 2], c \in [0.48, 1.62],$ and $d \in [-24, -18]$

C. $b \in [2, 5], c \in [8.79, 9.4],$ and $d \in [-165, -163]$

D. $b \in [-1, 2], c \in [-0.13, 0.06],$ and $d \in [-18, -14]$

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

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

A. $a \in [0, 7], b \in [-44, -36], c \in [-26, -17],$ and $d \in [101, 112]$

B. $a \in [0, 7], b \in [59, 62], c \in [138, 153],$ and $d \in [-109, -103]$

C. $a \in [0, 7], b \in [59, 62], c \in [138, 153],$ and $d \in [101, 112]$

D. $a \in [0, 7], b \in [-26, -18], c \in [-119, -111],$ and $d \in [-109, -103]$

E. $a \in [0, 7], b \in [-65, -60], c \in [138, 153],$ and $d \in [-109, -103]$

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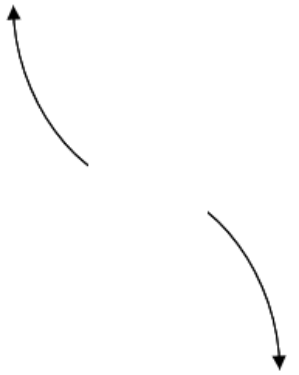
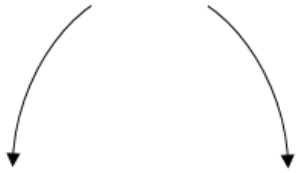
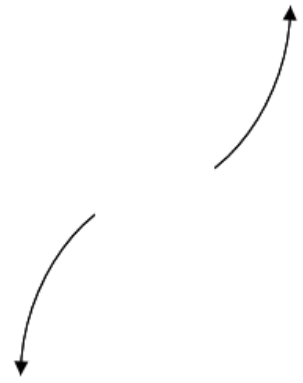
9. Describe the end behavior of the polynomial below.

$$f(x) = -4(x-5)^3(x+5)^4(x+6)^3(x-6)^3$$

A. 

C. 

B. 

D. 

E. None of the above.

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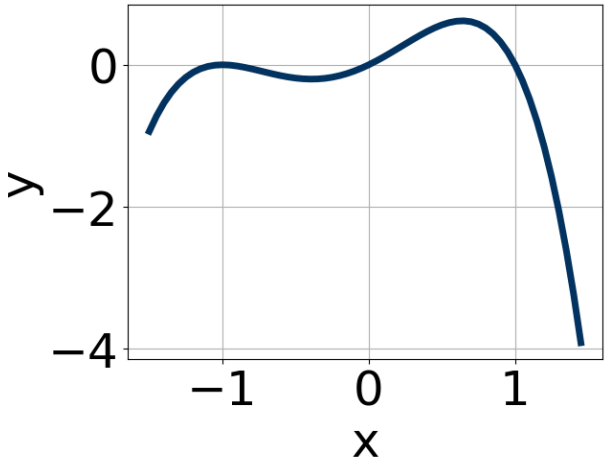
10. Which of the following equations *could* be of the graph presented below?



A. $10x^{11}(x+1)^4(x-1)^5$

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

C. $-12x^9(x+1)^8(x-1)^5$

D. $3x^{10}(x+1)^4(x-1)^{11}$

E. $-10x^9(x+1)^9(x-1)^{10}$