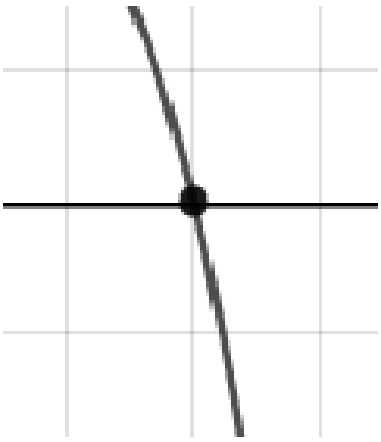
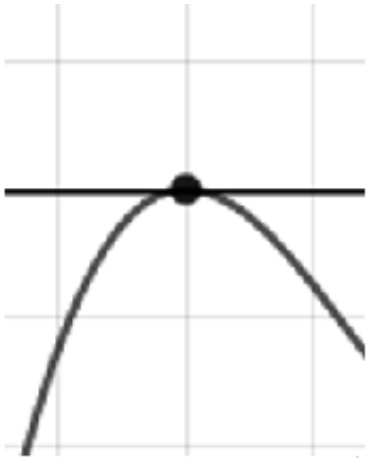
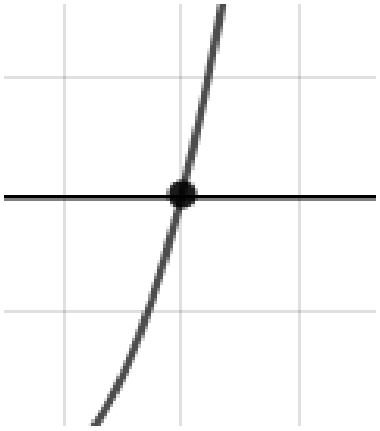
1. Describe the zero behavior of the zero $x = -6$ of the polynomial below.

$$f(x) = -6(x-6)^9(x+6)^{14}(x+3)^6(x-3)^9$$

A. 

C. 

B. 

D. 

E. None of the above.

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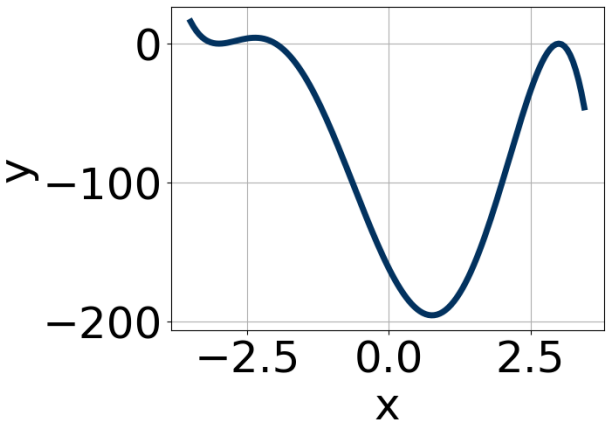
2. Which of the following equations *could* be of the graph presented below?



A. $17(x+3)^{10}(x-3)^{8}(x+2)^{7}$

B. $-10(x+3)^{6}(x-3)^{7}(x+2)^{7}$

C. $-8(x+3)^{6}(x-3)^{9}(x+2)^{8}$

D. $-15(x+3)^{10}(x-3)^{6}(x+2)^{11}$

E. $19(x+3)^{4}(x-3)^{6}(x+2)^{10}$

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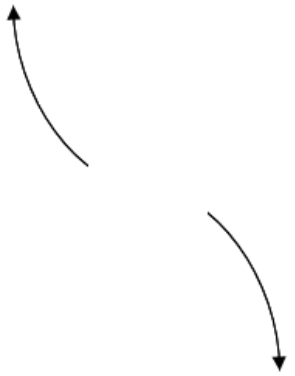
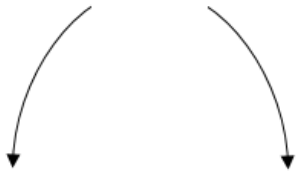
3. Describe the end behavior of the polynomial below.

$$f(x) = 2(x-9)^{2}(x+9)^{3}(x-2)^{4}(x+2)^{6}$$

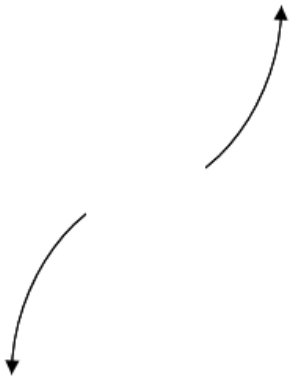


A.



B.

C.

D. 

E. None of the above.

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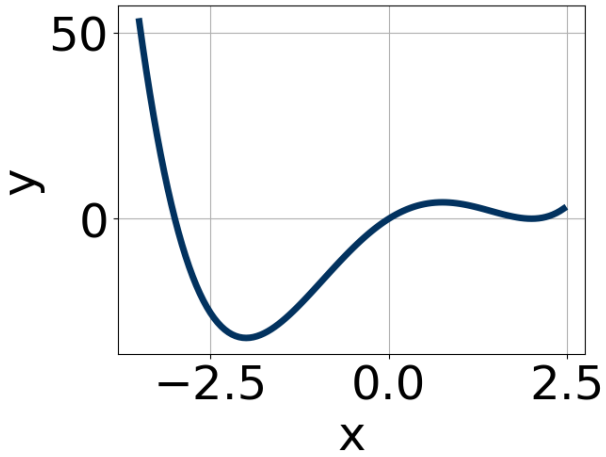
4. Which of the following equations *could* be of the graph presented below?



A. $19x^5(x-2)^6(x+3)^8$

B. $-15x^4(x-2)^4(x+3)^{11}$

C. $14x^5(x-2)^{10}(x+3)^{11}$

D. $18x^5(x-2)^9(x+3)^4$

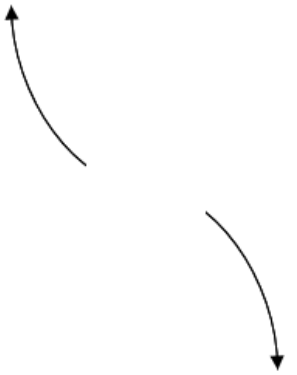
E. $-15x^{11}(x-2)^6(x+3)^5$

---

5. Describe the end behavior of the polynomial below.

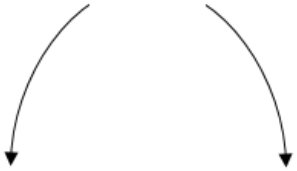
$$f(x) = 6(x-2)^4(x+2)^5(x+3)^4(x-3)^4$$

A.

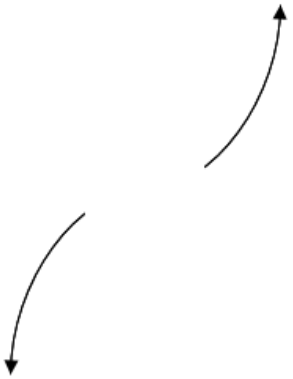


C.

B.



D.



E. None of the above.

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

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

A. $a \in [-1, 5], b \in [-17.9, -15.3], c \in [-36, -27],$ and $d \in [27, 36]$

B. $a \in [-1, 5], b \in [23.4, 27.8], c \in [22, 26],$ and $d \in [27, 36]$

C. $a \in [-1, 5], b \in [-13.7, -11.2], c \in [-60, -51],$ and $d \in [-30, -25]$

D. $a \in [-1, 5], b \in [23.4, 27.8], c \in [22, 26],$ and $d \in [-30, -25]$

E. $a \in [-1, 5], b \in [-27.3, -24], c \in [22, 26],$ and $d \in [27, 36]$

---

7. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in

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

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

A. $a \in [2, 7], b \in [24, 32], c \in [16, 21],$ and $d \in [-16, -2]$

B. $a \in [2, 7], b \in [-25, -22], c \in [16, 21],$ and $d \in [6, 10]$

C. $a \in [2, 7], b \in [-32, -27], c \in [32, 43],$ and $d \in [-16, -2]$

D. $a \in [2, 7], b \in [24, 32], c \in [16, 21],$ and $d \in [6, 10]$

E. $a \in [2, 7], b \in [6, 8], c \in [-30, -29],$ and $d \in [6, 10]$

---

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

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

A. $b \in [-10, 3], c \in [8, 16],$ and $d \in [14, 22]$

B. $b \in [8, 18], c \in [62, 78],$ and $d \in [116, 124]$

C. $b \in [-22, -9], c \in [62, 78],$ and $d \in [-118, -111]$

D. $b \in [-10, 3], c \in [-2, 3],$ and $d \in [-14, -5]$

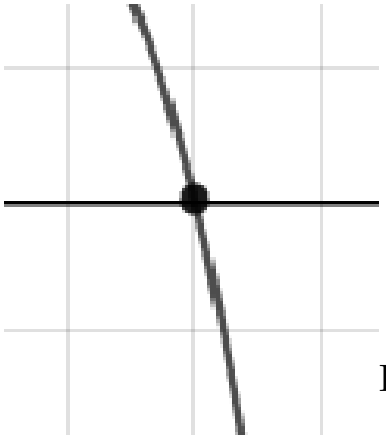
E. None of the above.

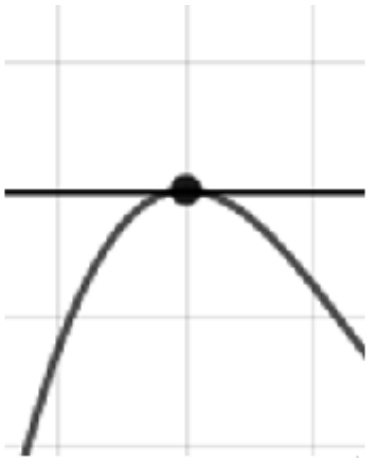
---

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

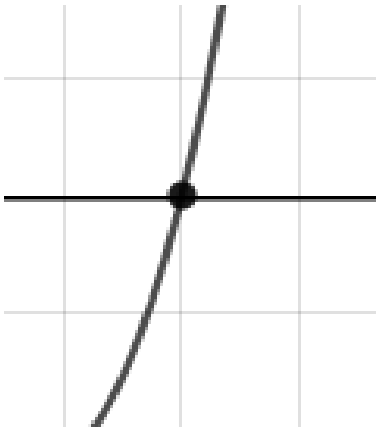
$$f(x) = -8(x - 4)^8(x + 4)^{11}(x + 9)^3(x - 9)^4$$

A.



B. 

C. 

D. 

E. None of the above.

---

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

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

A. $b \in [7, 17], c \in [58, 67],$ and $d \in [46, 54]$

B. $b \in [-15, -6], c \in [58, 67],$ and $d \in [-50, -44]$

C. $b \in [-4, 5], c \in [4, 7],$ and $d \in [1, 6]$

D. $b \in [-4, 5], c \in [-10, -3],$ and $d \in [-16, 1]$

E. None of the above.
