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

$$-4 - 5i \text{ and } 1$$

A. $b \in [-3, 2], c \in [3.3, 7.3],$ and $d \in [-5.77, -4.52]$

B. $b \in [-19, -6], c \in [32, 33.7],$ and $d \in [39.4, 41.41]$

C. $b \in [-3, 2], c \in [-1, 3.5],$ and $d \in [-4.47, -3.55]$

D. $b \in [2, 9], c \in [32, 33.7],$ and $d \in [-41.76, -39.64]$

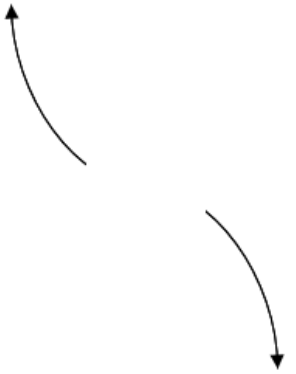
E. None of the above.

---

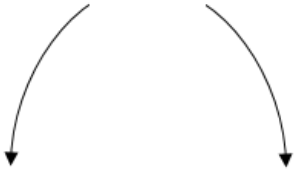
2. Describe the end behavior of the polynomial below.

$$f(x) = 2(x+9)^2(x-9)^5(x+6)^3(x-6)^4$$

A.

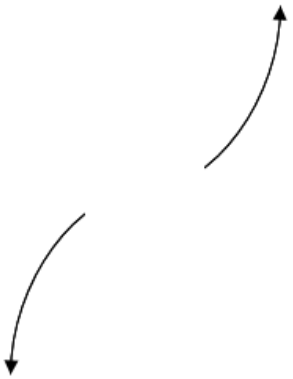


B.



C.

D.



E. None of the above.

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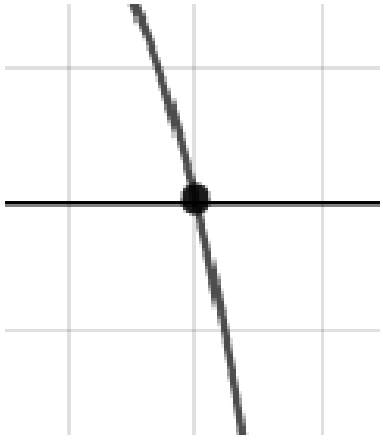
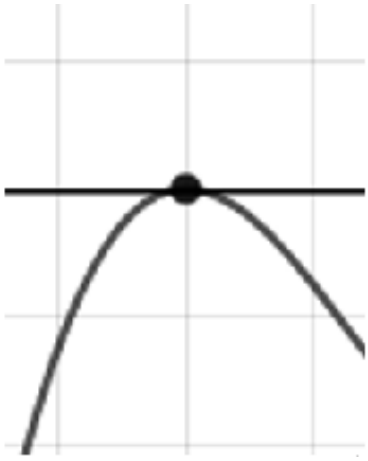
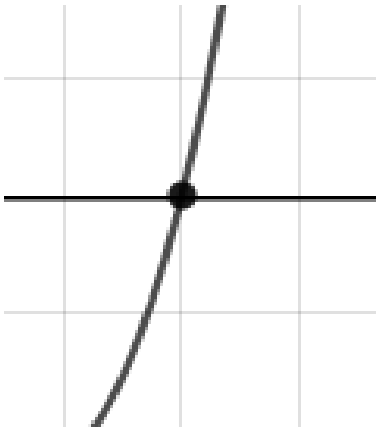
3. Describe the zero behavior of the zero $x = 5$ of the polynomial below.

$$f(x) = -6(x+7)^{10}(x-7)^{8}(x+5)^{12}(x-5)^{9}$$

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

$$\frac{-7}{5}, -4, \text{ and } \frac{-6}{5}$$

A. $a \in [24, 27], b \in [159, 167], c \in [296, 309],$ and $d \in [166, 170]$

B. $a \in [24, 27], b \in [159, 167], c \in [296, 309],$ and $d \in [-168, -161]$

C. $a \in [24, 27], b \in [-109, -104], c \in [-28, -20],$ and $d \in [166, 170]$

D. $a \in [24, 27], b \in [90, 102], c \in [-63, -56]$, and $d \in [-168, -161]$

E. $a \in [24, 27], b \in [-166, -163], c \in [296, 309]$, and $d \in [-168, -161]$

---

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

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

A. $a \in [9, 12], b \in [38, 45], c \in [-91, -85]$, and $d \in [171, 181]$

B. $a \in [9, 12], b \in [-45, -32], c \in [-91, -85]$, and $d \in [171, 181]$

C. $a \in [9, 12], b \in [55, 66], c \in [17, 22]$, and $d \in [-178, -168]$

D. $a \in [9, 12], b \in [38, 45], c \in [-91, -85]$, and $d \in [-178, -168]$

E. $a \in [9, 12], b \in [83, 95], c \in [227, 235]$, and $d \in [171, 181]$

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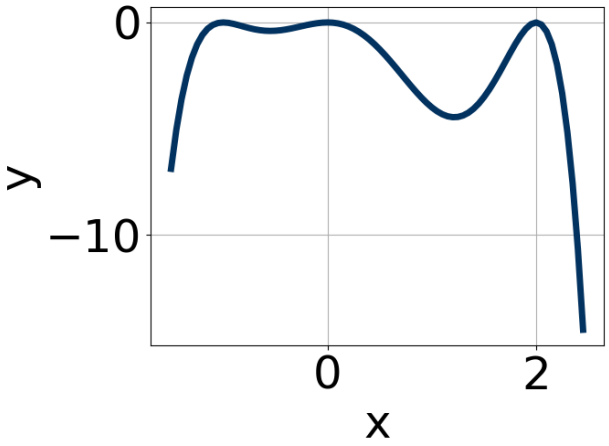
6. Which of the following equations *could* be of the graph presented below?



A. $-2x^4(x-2)^8(x+1)^4$

B. $17x^6(x-2)^4(x+1)^9$

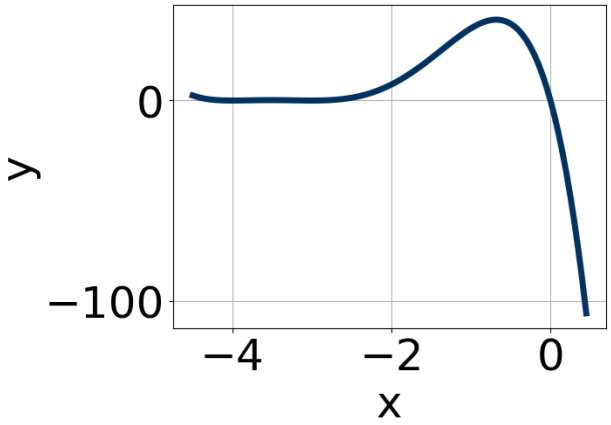
C. $-12x^9(x-2)^{10}(x+1)^7$

D. $-17x^4(x-2)^6(x+1)^9$

E. $11x^6(x-2)^4(x+1)^8$

---

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



A. $-16x^{11}(x+3)^4(x+4)^4$

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

C. $10x^9(x+3)^8(x+4)^4$

D. $18x^6(x+3)^6(x+4)^{10}$

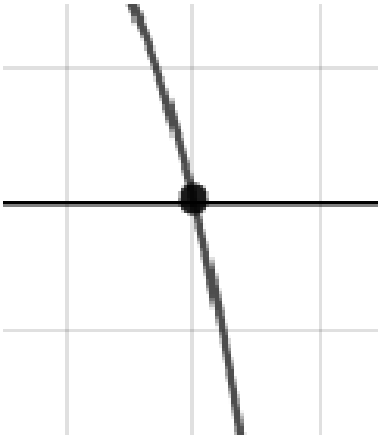
E. $-15x^{11}(x+3)^8(x+4)^9$

---

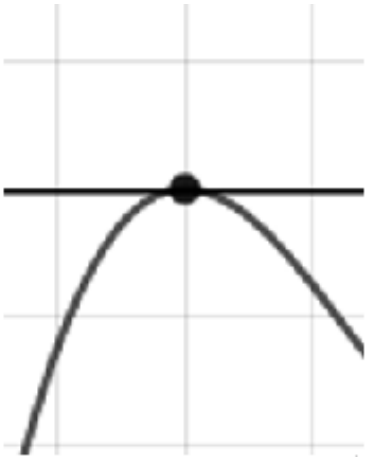
8. Describe the zero behavior of the zero $x=-2$ of the polynomial below.

$$f(x) = 9(x+2)^9(x-2)^{14}(x+7)^4(x-7)^8$$

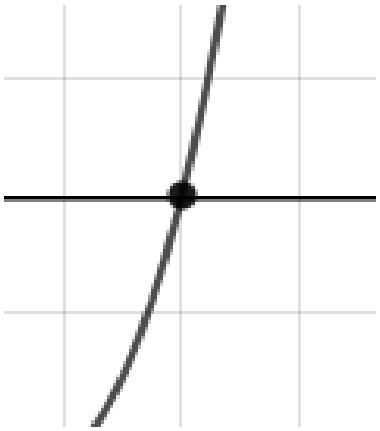
A.



B.



C. 

D. 

E. None of the above.

---

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

$$4 + 2i \text{ and } 3$$

A. $b \in [-3, 2], c \in [-8.19, -6.43],$ and $d \in [12, 18]$

B. $b \in [-18, -8], c \in [42.96, 45.21],$ and $d \in [-60, -55]$

C. $b \in [10, 12], c \in [42.96, 45.21],$ and $d \in [53, 64]$

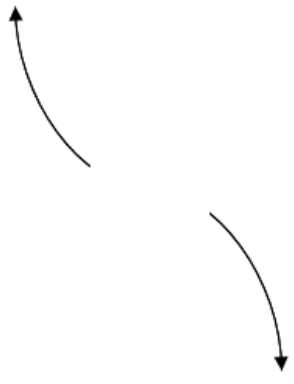
D. $b \in [-3, 2], c \in [-5.57, -3.76],$ and $d \in [-2, 10]$

E. None of the above.

---

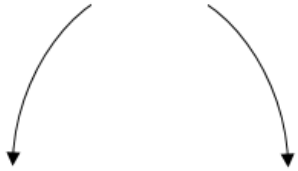
10. Describe the end behavior of the polynomial below.

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



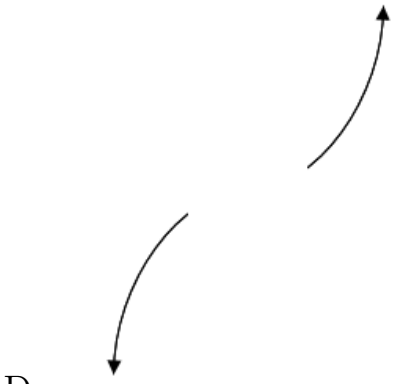
A.

B.



C.

D.



E. None of the above.
