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

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

A. $b \in [-5, 4], c \in [5.6, 7.3],$ and $d \in [0, 15]$

B. $b \in [7, 14], c \in [30.7, 35.8],$ and $d \in [32, 45]$

C. $b \in [-10, -6], c \in [30.7, 35.8],$ and $d \in [-46, -38]$

D. $b \in [-5, 4], c \in [-1.3, 3.2],$ and $d \in [-6, -3]$

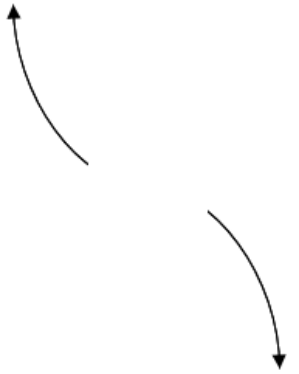
E. None of the above.

---

2. Describe the end behavior of the polynomial below.

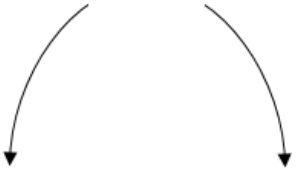
$$f(x) = -9(x+3)^2(x-3)^3(x+7)^5(x-7)^5$$

A.

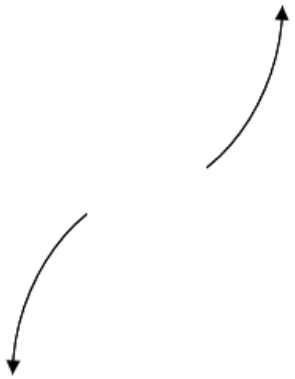


C.

B.



D.

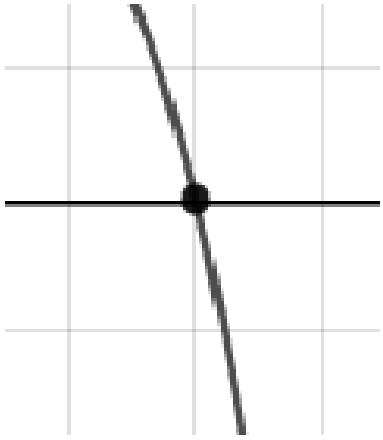


E. None of the above.

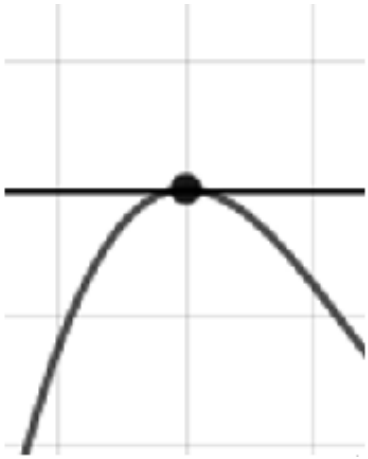
---

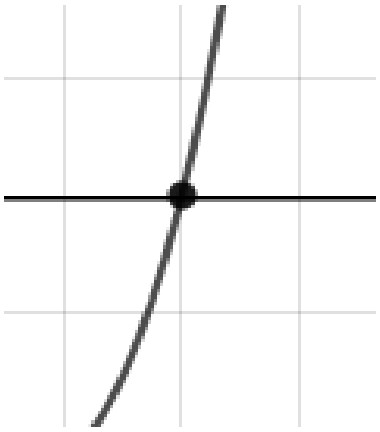
3. Describe the zero behavior of the zero $x = 7$ of the polynomial below.

$$f(x) = -6(x-4)^7(x+4)^4(x+7)^7(x-7)^2$$

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

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

A. $a \in [17, 27], b \in [86, 92], c \in [-71, -61],$ and $d \in [-100, -98]$

B. $a \in [17, 27], b \in [-59, -53], c \in [-192, -178],$ and $d \in [-100, -98]$

C. $a \in [17, 27], b \in [86, 92], c \in [-71, -61],$ and $d \in [98, 103]$

D. $a \in [17, 27], b \in [140, 144], c \in [220, 226],$ and $d \in [98, 103]$

E. $a \in [17, 27], b \in [-98, -90], c \in [-71, -61],$ and $d \in [98, 103]$

---

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

$$\frac{3}{4}, \frac{1}{2}, \text{ and } 6$$

A. $a \in [8, 11], b \in [-65, -57], c \in [61, 72],$ and $d \in [-19, -16]$

B. $a \in [8, 11], b \in [-40, -35], c \in [-61, -55],$ and $d \in [-19, -16]$

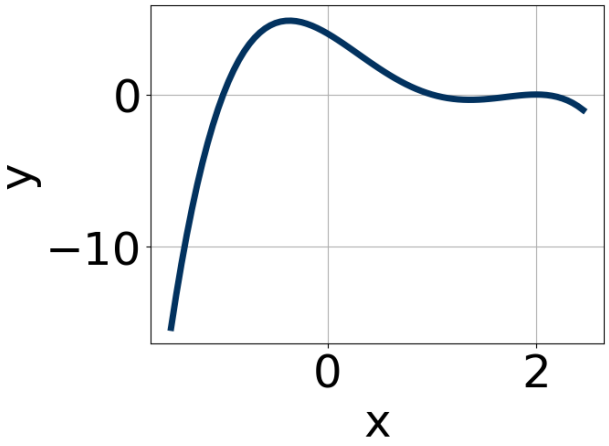
C. $a \in [8, 11], b \in [51, 60], c \in [61, 72],$ and $d \in [17, 19]$

D. $a \in [8, 11], b \in [-65, -57], c \in [61, 72],$ and $d \in [17, 19]$

E. $a \in [8, 11], b \in [-48, -40], c \in [-17, -9],$ and $d \in [17, 19]$

---

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



A. $-13(x-2)^{10}(x-1)^9(x+1)^7$

B. $-5(x-2)^{11}(x-1)^{10}(x+1)^5$

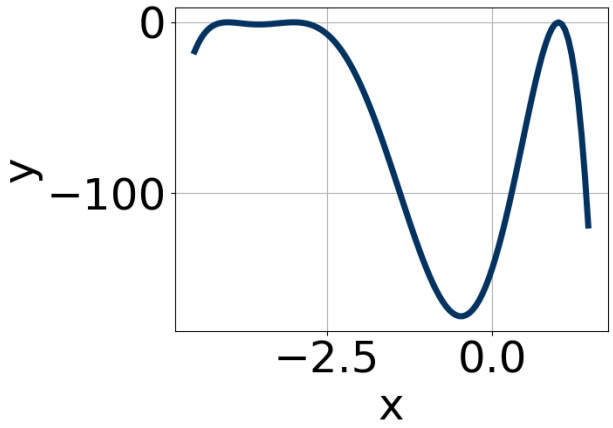
C. $3(x-2)^8(x-1)^7(x+1)^{10}$

D. $-10(x-2)^6(x-1)^6(x+1)^9$

E. $6(x-2)^{10}(x-1)^{7}(x+1)^{9}$

---

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



A. $-15(x+3)^{8}(x+4)^{5}(x-1)^{9}$

B. $11(x+3)^{10}(x+4)^{6}(x-1)^{9}$

C. $-11(x+3)^{6}(x+4)^{4}(x-1)^{11}$

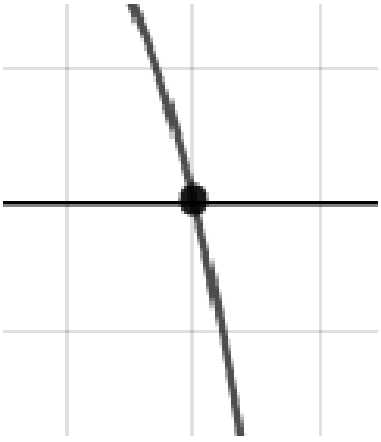
D. $16(x+3)^{4}(x+4)^{8}(x-1)^{4}$

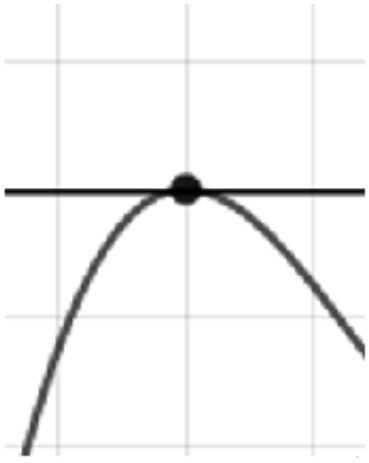
E. $-17(x+3)^{4}(x+4)^{6}(x-1)^{10}$

---

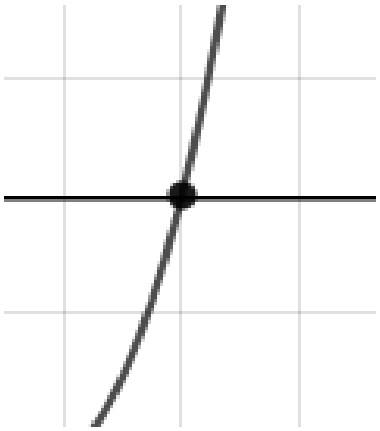
8. Describe the zero behavior of the zero $x=4$ of the polynomial below.

$$f(x) = -2(x-3)^{4}(x+3)^{2}(x-4)^{9}(x+4)^{8}$$

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

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

A. $b \in [6, 12], c \in [3.05, 4.75],$ and $d \in [-104, -101]$

B. $b \in [-11, -5], c \in [3.05, 4.75],$ and $d \in [101, 108]$

C. $b \in [-6, 4], c \in [-0.86, 0.21],$ and $d \in [-14, -3]$

D. $b \in [-6, 4], c \in [1.77, 2.48],$ and $d \in [-17, -13]$

E. None of the above.

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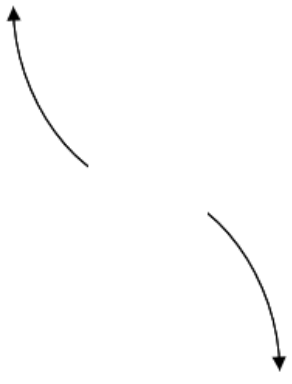
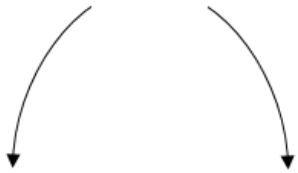
10. Describe the end behavior of the polynomial below.

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



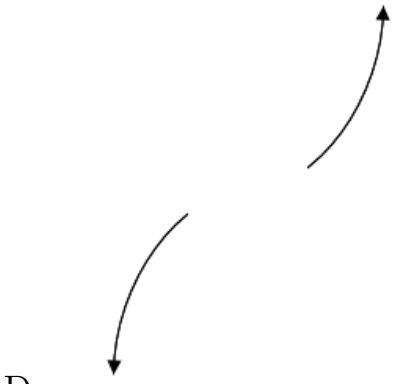
A.

B.



C.

D.



E. None of the above.
