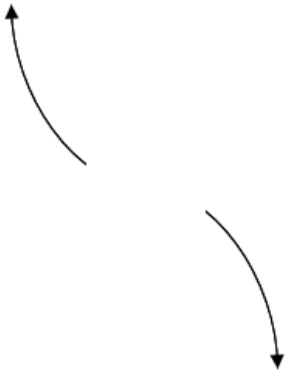
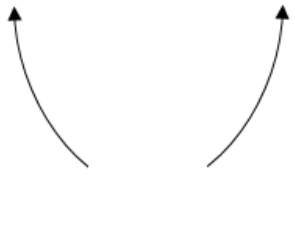
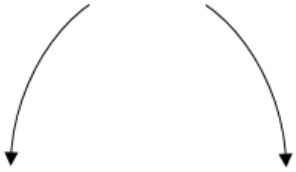
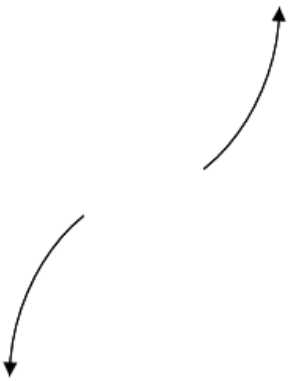
1. Describe the end behavior of the polynomial below.

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

A.


C.


B.


D.


E. None of the above.

---

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

$$-5, \frac{-3}{5}, \text{ and } \frac{6}{5}$$

A. $a \in [25, 34], b \in [106, 125], c \in [-95, -91],$ and $d \in [87, 95]$

B. $a \in [25, 34], b \in [-141, -137], c \in [52, 58],$ and $d \in [87, 95]$

C. $a \in [25, 34], b \in [-112, -103], c \in [-95, -91],$ and $d \in [87, 95]$

D. $a \in [25, 34], b \in [106, 125], c \in [-95, -91],$ and $d \in [-91, -88]$

E. $a \in [25, 34], b \in [-174, -169], c \in [239, 248],$ and $d \in [-91, -88]$

---

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

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

A. $b \in [-9, -7], c \in [28.54, 29.25],$ and $d \in [-53, -48]$

B. $b \in [4, 13], c \in [28.54, 29.25],$ and $d \in [47, 55]$

C. $b \in [-7, 3], c \in [5.19, 6.76],$ and $d \in [3, 9]$

D. $b \in [-7, 3], c \in [6.86, 8.71],$ and $d \in [10, 20]$

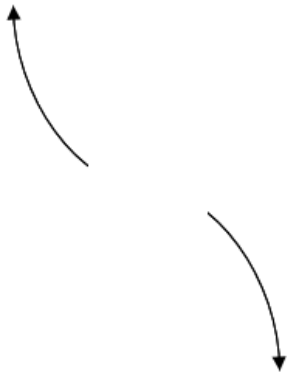
E. None of the above.

---

4. Describe the end behavior of the polynomial below.

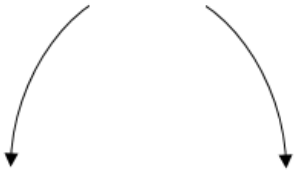
$$f(x) = -5(x-3)^5(x+3)^{10}(x-2)^5(x+2)^5$$

A.

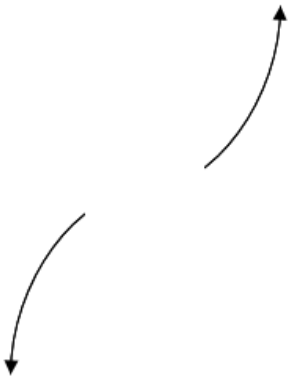


C.

B.



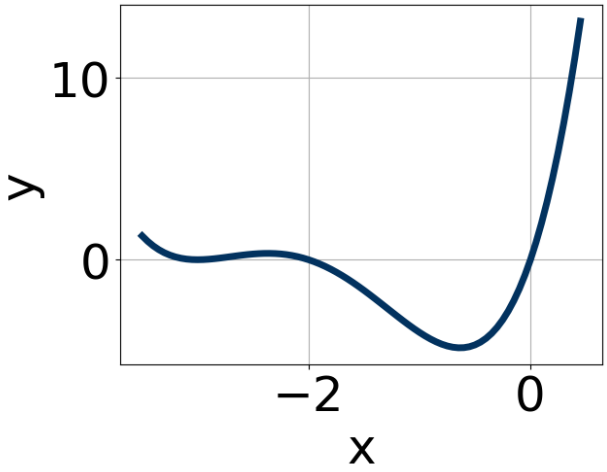
D.



E. None of the above.

---

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



A. $-15x^7(x+3)^8(x+2)^5$

B. $-20x^4(x+3)^8(x+2)^9$

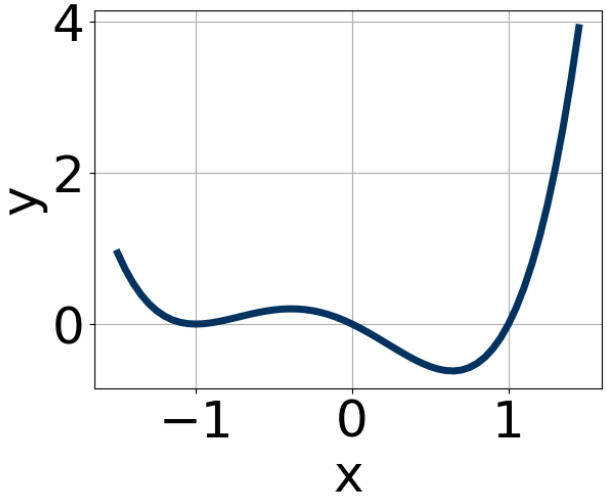
C. $4x^9(x+3)^6(x+2)^9$

D. $18x^7(x+3)^6(x+2)^4$

E. $13x^7(x+3)^5(x+2)^{10}$

---

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



A. $16x^5(x+1)^4(x-1)^9$

B. $3x^7(x+1)^6(x-1)^8$

C. $-6x^6(x+1)^{10}(x-1)^9$

D. $6x^5(x+1)^{11}(x-1)^{10}$

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

---

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.

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

A. $a \in [0,14], b \in [-27,-22], c \in [-65,-57],$ and $d \in [-24,-21]$

B. $a \in [0,14], b \in [-51,-41], c \in [70,76],$ and $d \in [-24,-21]$

C. $a \in [0,14], b \in [39,51], c \in [70,76],$ and $d \in [-24,-21]$

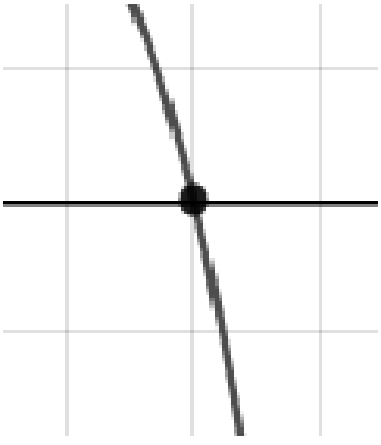
D. $a \in [0,14], b \in [39,51], c \in [70,76],$ and $d \in [19,25]$

E. $a \in [0,14], b \in [-36,-27], c \in [-37,-31],$ and $d \in [19,25]$

---

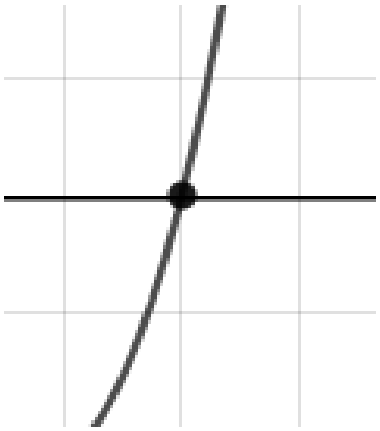
8. Describe the zero behavior of the zero $x=3$ of the polynomial below.

$$f(x) = -2(x+3)^7(x-3)^8(x-2)^9(x+2)^{11}$$

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

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

A. $b \in [-1, 6], c \in [-10, -1],$ and $d \in [2, 7]$

B. $b \in [4, 11], c \in [32, 39],$ and $d \in [-43, -38]$

C. $b \in [-13, -3], c \in [32, 39],$ and $d \in [35, 44]$

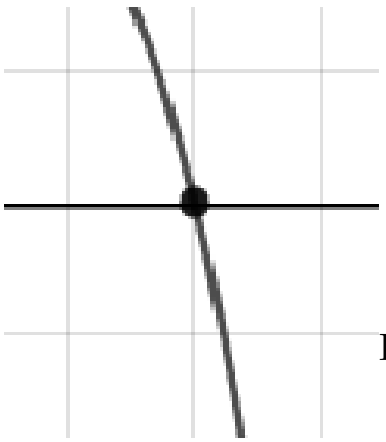
D. $b \in [-1, 6], c \in [2, 4],$ and $d \in [-5, 4]$

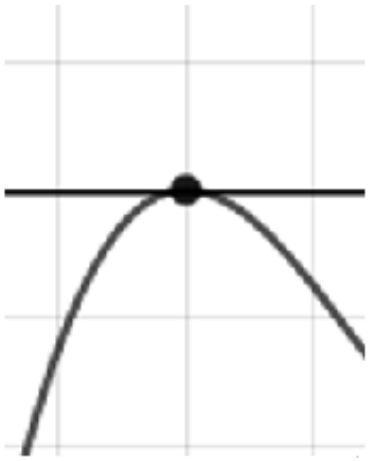
E. None of the above.

---

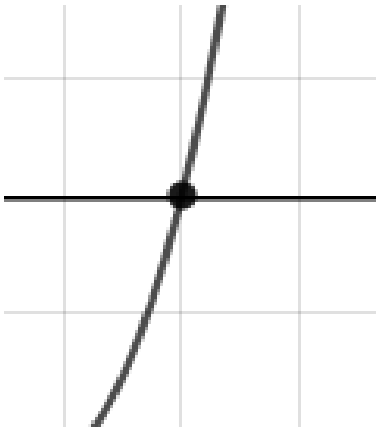
10. Describe the zero behavior of the zero $x = -4$ of the polynomial below.

$$f(x) = -7(x + 4)^6(x - 4)^9(x - 7)^5(x + 7)^7$$

A. 

B. 

C. 

D. 

E. None of the above.
