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

$$-3, \frac{-3}{4}, \text{ and } \frac{7}{3}$$

A. $a \in [12, 13], b \in [14, 21], c \in [-78, -75],$ and $d \in [61, 66]$

B. $a \in [12, 13], b \in [-57, -54], c \in [22, 39],$ and $d \in [61, 66]$

C. $a \in [12, 13], b \in [-23, -13], c \in [-78, -75],$ and $d \in [61, 66]$

D. $a \in [12, 13], b \in [14, 21], c \in [-78, -75],$ and $d \in [-63, -57]$

E. $a \in [12, 13], b \in [-78, -63], c \in [131, 136],$ and $d \in [-63, -57]$

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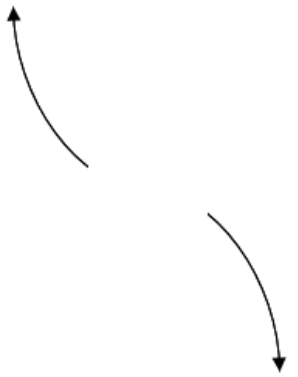
2. Describe the end behavior of the polynomial below.

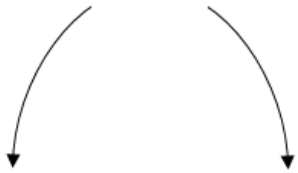
$$f(x) = 3(x-9)^5(x+9)^6(x-3)^3(x+3)^4$$

A.

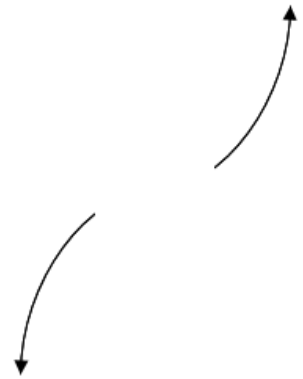


C.

B.



D.



E. None of the above.

---

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

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

A. $b \in [0.5, 1.3], c \in [-0.75, 0.06],$ and $d \in [-6.3, -3.5]$

B. $b \in [0.5, 1.3], c \in [1.85, 3.06],$ and $d \in [-10.4, -7.1]$

C. $b \in [-2.2, 0.7], c \in [11.7, 12.65],$ and $d \in [39.5, 42.6]$

D. $b \in [1.5, 2.9], c \in [11.7, 12.65],$ and $d \in [-41.8, -38.7]$

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

$$\frac{7}{3}, \frac{-1}{4}, \text{ and } \frac{6}{5}$$

A. $a \in [57, 65], b \in [73, 89], c \in [-153, -150],$ and $d \in [-43, -39]$

B. $a \in [57, 65], b \in [-199, -195], c \in [108, 120],$ and $d \in [-43, -39]$

C. $a \in [57, 65], b \in [196, 200], c \in [108, 120],$ and $d \in [-43, -39]$

D. $a \in [57, 65], b \in [-199, -195], c \in [108, 120],$ and $d \in [33, 43]$

E. $a \in [57, 65], b \in [47, 60], c \in [-185, -182],$ and $d \in [33, 43]$

---

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

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

A. $b \in [-7, 7], c \in [-10, 4],$ and $d \in [-13, -4]$

B. $b \in [-9, -4], c \in [29, 36],$ and $d \in [37, 44]$

C. $b \in [4, 12], c \in [29, 36],$ and $d \in [-43, -39]$

D. $b \in [-7, 7], c \in [3, 13],$ and $d \in [0, 8]$

E. None of the above.

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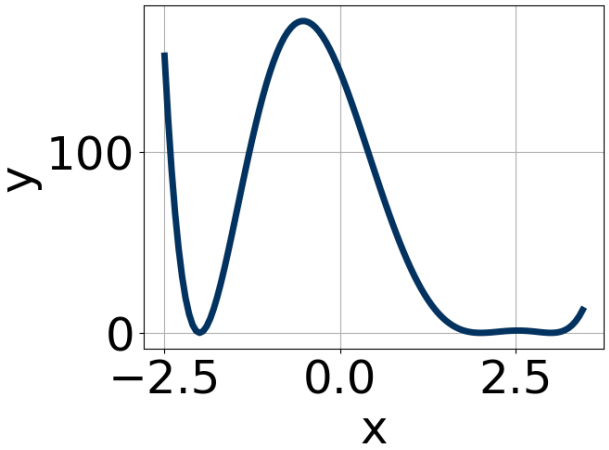
6. Which of the following equations *could* be of the graph presented below?



A. $5(x-2)^6(x+2)^{11}(x-3)^7$

B. $17(x-2)^6(x+2)^{10}(x-3)^7$

C. $-5(x-2)^4(x+2)^{10}(x-3)^4$

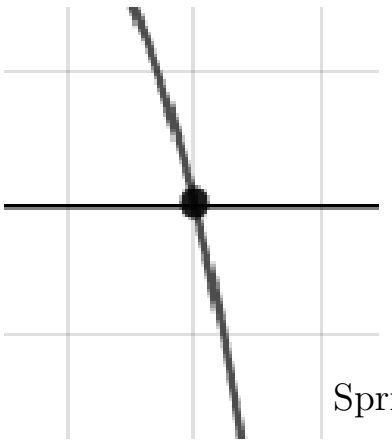
D. $16(x-2)^4(x+2)^4(x-3)^8$

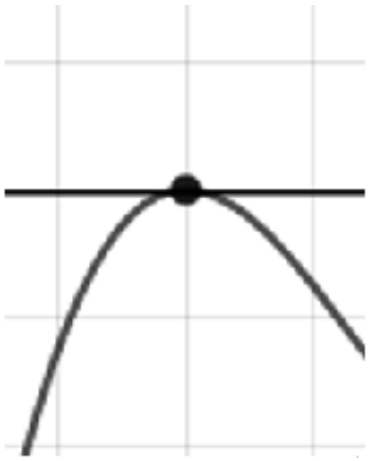
E. $-18(x-2)^8(x+2)^4(x-3)^7$

---

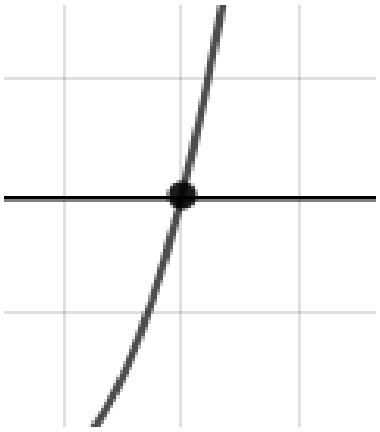
7. Describe the zero behavior of the zero $x = -3$ of the polynomial below.

$$f(x) = -2(x-3)^2(x+3)^3(x-4)^4(x+4)^7$$

A. 

B. 

C. 

D. 

E. None of the above.

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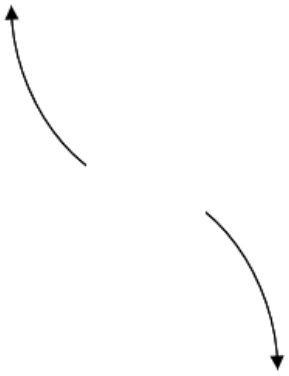
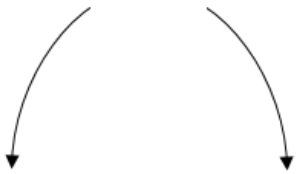
8. Describe the end behavior of the polynomial below.

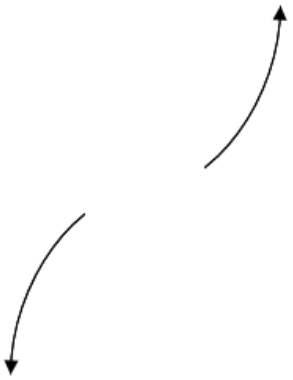
$$f(x) = 9(x-7)^4(x+7)^5(x+6)^3(x-6)^4$$

A. 

B. 

C.

D.



E. None of the above.

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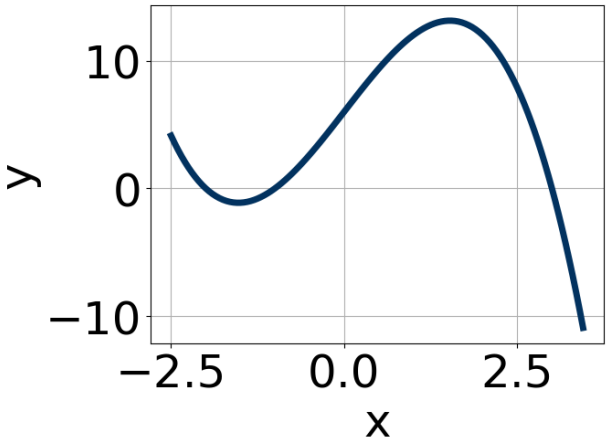
9. Which of the following equations *could* be of the graph presented below?



A. $-3(x+2)^{10}(x+1)^{10}(x-3)^{9}$

B. $20(x+2)^{7}(x+1)^{11}(x-3)^{7}$

C. $-2(x+2)^{8}(x+1)^{9}(x-3)^{7}$

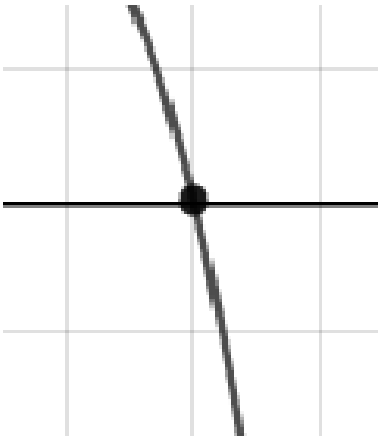
D. $-12(x+2)^{11}(x+1)^{5}(x-3)^{9}$

E. $10(x+2)^{6}(x+1)^{7}(x-3)^{11}$

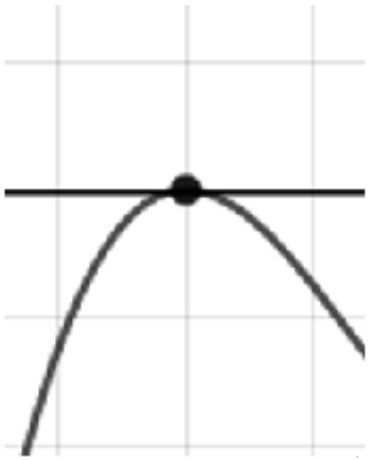
---

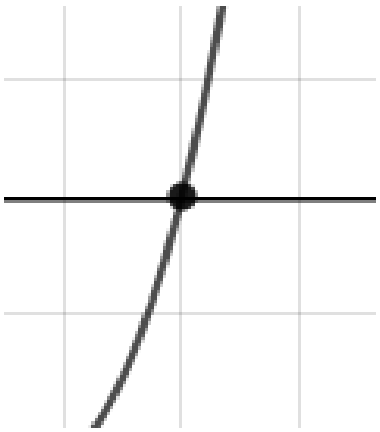
10. Describe the zero behavior of the zero $x=-3$ of the polynomial below.

$$f(x)=3(x-3)^{4}(x+3)^{5}(x-9)^{8}(x+9)^{10}$$

A. 

C. 

B. 

D. 

E. None of the above.