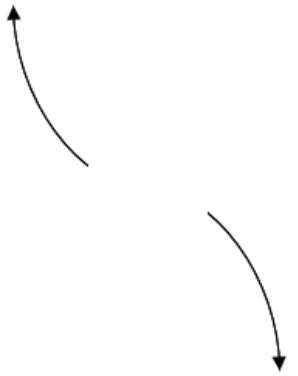
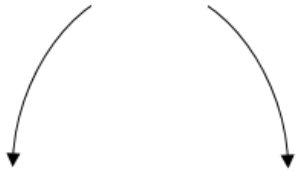
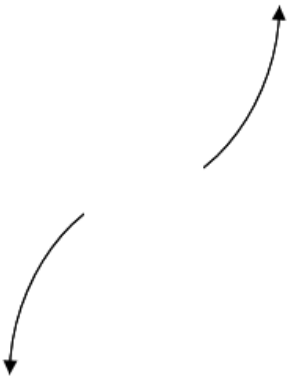
1. Describe the end behavior of the polynomial below.

$$f(x) = -6(x-7)^3(x+7)^8(x+2)^3(x-2)^3$$

A.


C.


B.


D.


E. None of the above.

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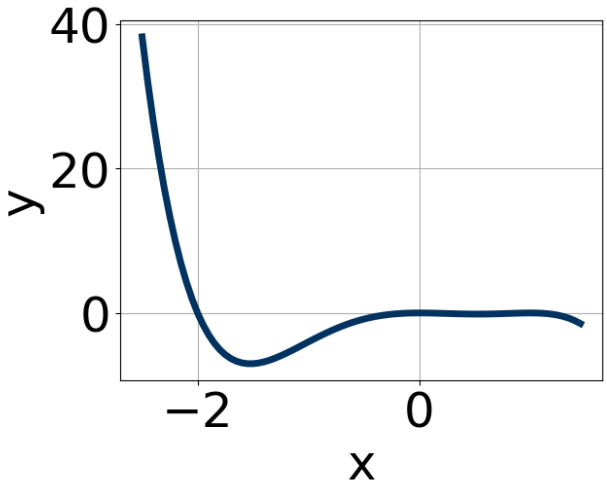
2. Which of the following equations *could* be of the graph presented below?



A. $8x^4(x-1)^4(x+2)^{11}$

B. $-15x^4(x-1)^{11}(x+2)^{10}$

C. $-3x^{10}(x-1)^9(x+2)^{11}$

D. $16x^8(x-1)^8(x+2)^4$

E. $-20x^4(x-1)^6(x+2)^7$

---

3. 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.

$$\frac{-2}{3}, \frac{4}{5}, \text{ and } \frac{-5}{4}$$

A. $a \in [51,65], b \in [-78,-65], c \in [-43,-39],$ and $d \in [40,46]$

B. $a \in [51,65], b \in [64,74], c \in [-43,-39],$ and $d \in [40,46]$

C. $a \in [51,65], b \in [64,74], c \in [-43,-39],$ and $d \in [-41,-38]$

D. $a \in [51,65], b \in [82,84], c \in [-26,-18],$ and $d \in [-41,-38]$

E. $a \in [51,65], b \in [-13,-11], c \in [-83,-76],$ and $d \in [40,46]$

---

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.

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

A. $a \in [12,26], b \in [-113,-109], c \in [157,171],$ and $d \in [-45,-34]$

B. $a \in [12,26], b \in [102,105], c \in [113,118],$ and $d \in [-45,-34]$

C. $a \in [12,26], b \in [48,52], c \in [-153,-150],$ and $d \in [34,42]$

D. $a \in [12,26], b \in [112,116], c \in [157,171],$ and $d \in [34,42]$

E. $a \in [12,26], b \in [-113,-109], c \in [157,171],$ and $d \in [34,42]$

---

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

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

A. $b \in [0.3, 3.1], c \in [5, 10],$ and $d \in [8, 12]$

B. $b \in [2.1, 8.9], c \in [15, 28],$ and $d \in [-89, -71]$

C. $b \in [0.3, 3.1], c \in [-3, -1],$ and $d \in [-8, -3]$

D. $b \in [-7.3, -5.9], c \in [15, 28],$ and $d \in [82, 85]$

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

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

A. $b \in [-0.42, 1.63], c \in [-3.2, 1],$ and $d \in [-14, -6]$

B. $b \in [-4.7, -1.52], c \in [14.7, 18.4],$ and $d \in [102, 106]$

C. $b \in [-0.42, 1.63], c \in [1.8, 4.8],$ and $d \in [-17, -13]$

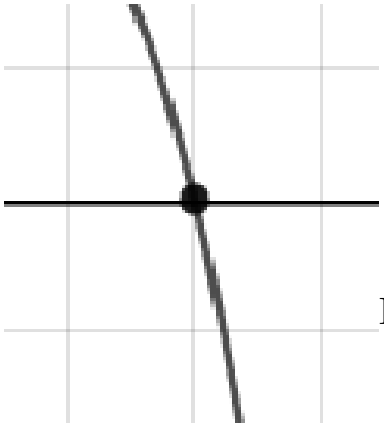
D. $b \in [2.39, 3.09], c \in [14.7, 18.4],$ and $d \in [-107, -92]$

E. None of the above.

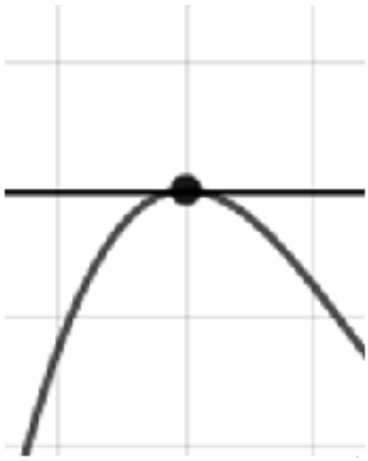
---

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

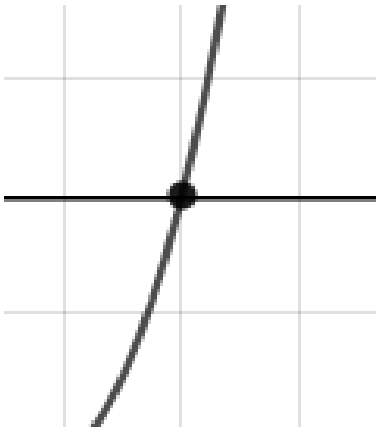
$$f(x) = -9(x-5)^6(x+5)^5(x-2)^{11}(x+2)^6$$



A

B. 

C. 

D. 

E. None of the above.

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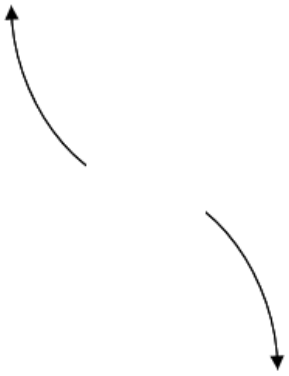
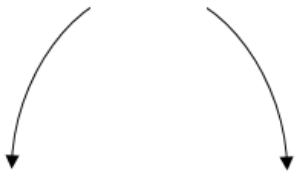
8. Describe the end behavior of the polynomial below.

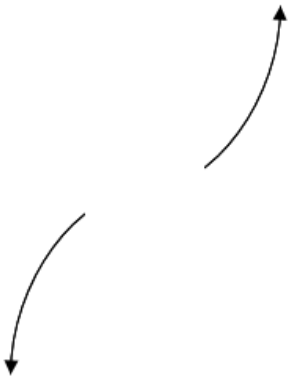
$$f(x) = -5(x+8)^2(x-8)^5(x+7)^3(x-7)^3$$

A. 

B. 

C.

D.



E. None of the above.

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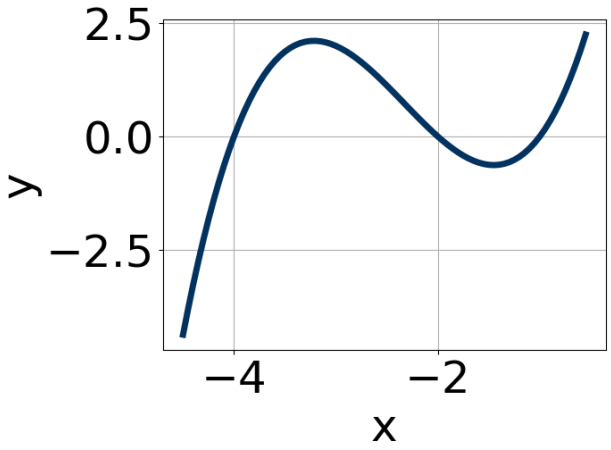
9. Which of the following equations *could* be of the graph presented below?



A. $-4(x+4)^9(x+1)^9(x+2)^5$

B. $-2(x+4)^4(x+1)^5(x+2)^{11}$

C. $20(x+4)^{11}(x+1)^7(x+2)^{11}$

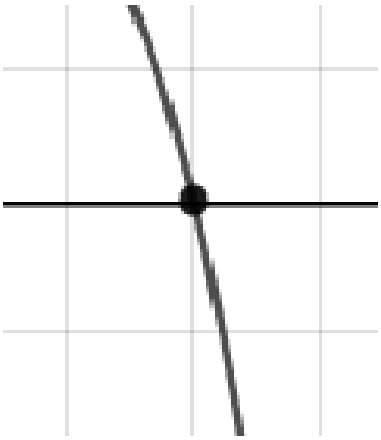
D. $10(x+4)^4(x+1)^9(x+2)^{11}$

E. $12(x+4)^{10}(x+1)^8(x+2)^7$

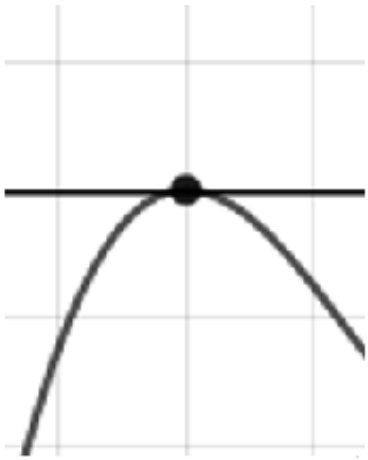
---

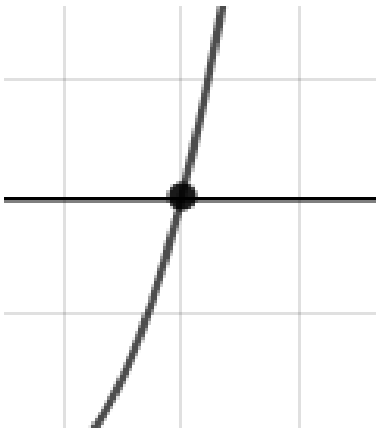
10. Describe the zero behavior of the zero $x = 2$ of the polynomial below.

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

A. 

C. 

B. 

D. 

E. None of the above.