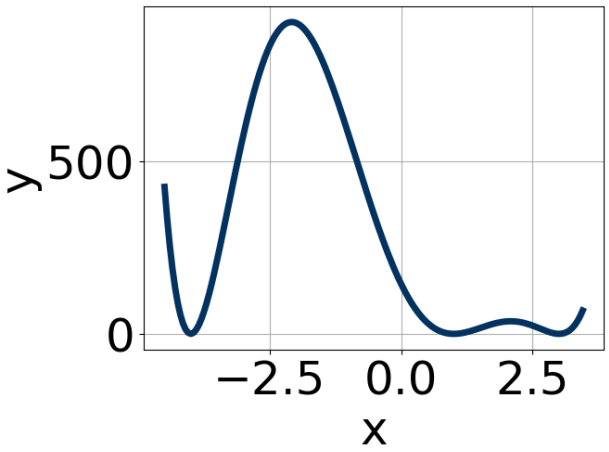
1. Which of the following equations *could* be of the graph presented below?



A. $-5(x+4)^4(x-1)^4(x-3)^6$

B. $7(x+4)^4(x-1)^6(x-3)^6$

C. $2(x+4)^6(x-1)^{10}(x-3)^7$

D. $6(x+4)^6(x-1)^5(x-3)^{11}$

E. $-17(x+4)^{10}(x-1)^{10}(x-3)^{11}$

---

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

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

A. $b \in [1, 8], c \in [-7.98, -6.69],$ and $d \in [9.7, 10.6]$

B. $b \in [1, 8], c \in [-6.23, -5.01],$ and $d \in [6.5, 9.7]$

C. $b \in [-15, -10], c \in [60.98, 61.96],$ and $d \in [-84.3, -79.9]$

D. $b \in [8, 15], c \in [60.98, 61.96],$ and $d \in [80.1, 83.9]$

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

$$\frac{-2}{3}, \frac{4}{5}, \text{ and } \frac{-1}{4}$$

A. $a \in [58, 61], b \in [-8, -6], c \in [-40, -31],$ and $d \in [1, 11]$

B. $a \in [58, 61], b \in [14, 25], c \in [-31, -29],$ and $d \in [-10, -6]$

C. $a \in [58, 61], b \in [-73, -63], c \in [5, 13],$ and $d \in [1, 11]$

D. $a \in [58, 61], b \in [-4, 10], c \in [-40, -31],$ and $d \in [-10, -6]$

E. $a \in [58, 61], b \in [-4, 10], c \in [-40, -31],$ and $d \in [1, 11]$

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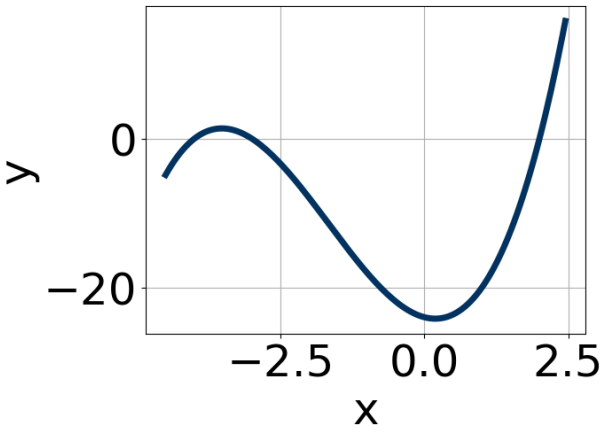
4. Which of the following equations *could* be of the graph presented below?



A. $16(x + 3)^5(x - 2)^{11}(x + 4)^7$

B. $4(x + 3)^8(x - 2)^{10}(x + 4)^{11}$

C. $-16(x + 3)^{11}(x - 2)^5(x + 4)^5$

D. $-20(x + 3)^6(x - 2)^5(x + 4)^{11}$

E. $20(x + 3)^6(x - 2)^7(x + 4)^7$

---

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

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

A. $a \in [38, 49], b \in [38, 47], c \in [-40, -29],$ and $d \in [-23, -17]$

B. $a \in [38, 49], b \in [13, 17], c \in [-58, -53],$ and $d \in [13, 20]$

C. $a \in [38, 49], b \in [-108, -98], c \in [72, 89],$ and $d \in [-23, -17]$

D. $a \in [38, 49], b \in [-108, -98], c \in [72, 89],$ and $d \in [13, 20]$

E. $a \in [38, 49], b \in [103, 112], c \in [72, 89],$ and $d \in [13, 20]$

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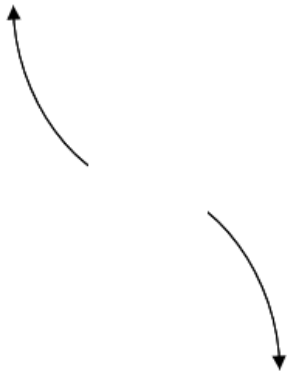
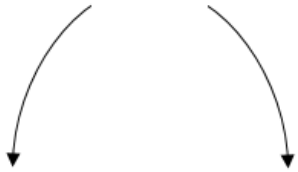
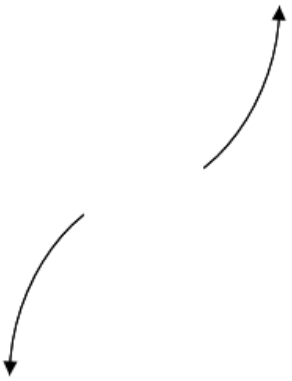
6. Describe the end behavior of the polynomial below.

$$f(x) = 2(x+6)^5(x-6)^8(x-4)^3(x+4)^3$$

A. 

B. 

C. 

D. 

E. None of the above.

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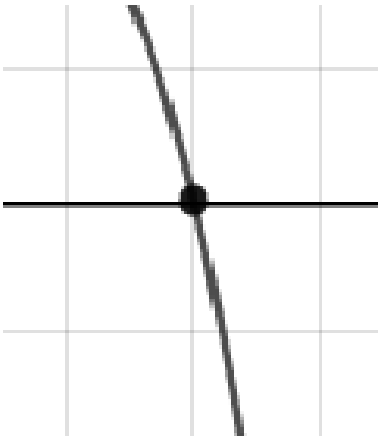
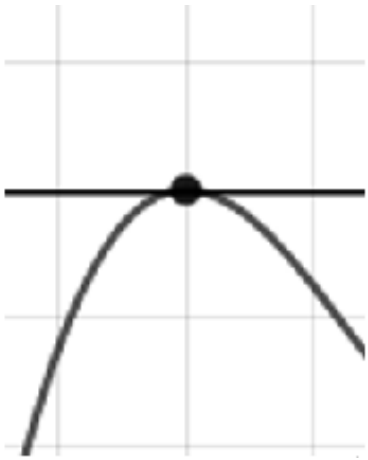
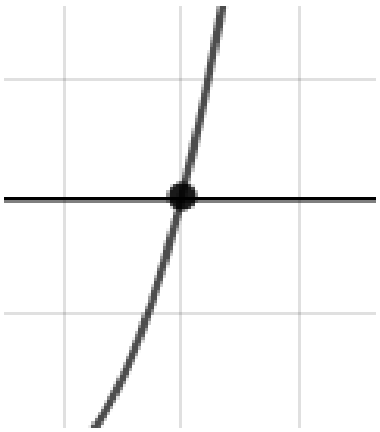
7. Describe the zero behavior of the zero $x = -7$ of the polynomial below.

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

A. 

C. 

B. 

D. 

E. None of the above.

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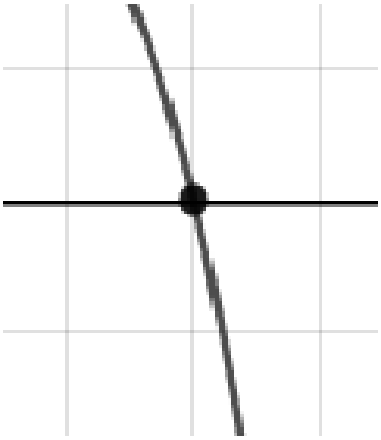
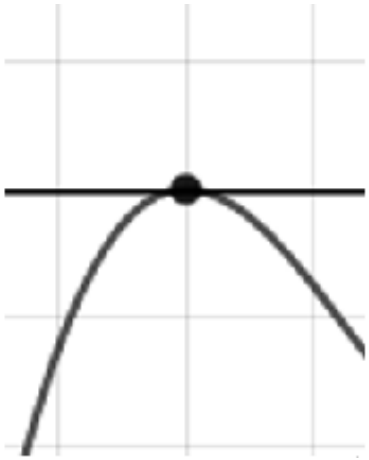
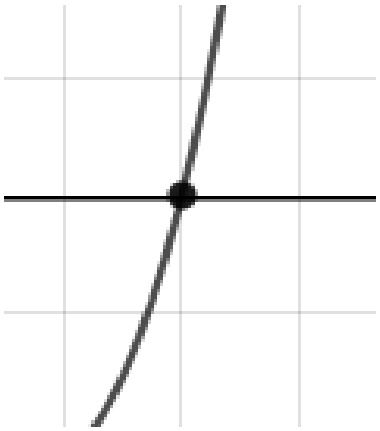
8. Describe the zero behavior of the zero $x = 3$ of the polynomial below.

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

A. 

B. 

C. 

D. 

E. None of the above.

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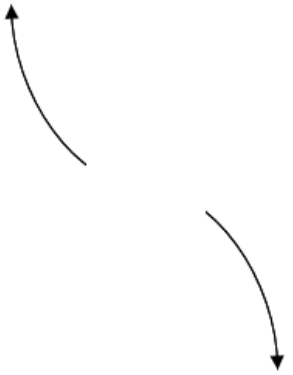
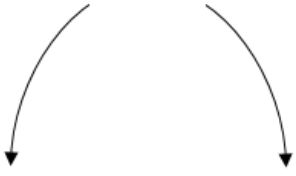
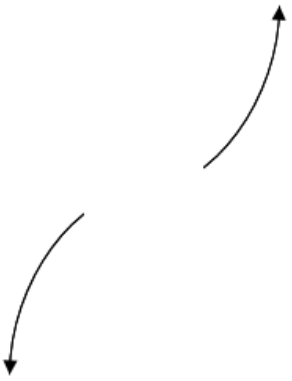
9. Describe the end behavior of the polynomial below.

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

A. 

B. 

C. 

D. 

E. None of the above.

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

$$3 - 3i \text{ and } 1$$

A. $b \in [-15, -5], c \in [18, 28],$ and $d \in [-19.7, -15.4]$

B. $b \in [1, 2], c \in [-6, -1],$ and $d \in [1.5, 3.1]$

C. $b \in [3, 8], c \in [18, 28],$ and $d \in [17.8, 20.6]$

D. $b \in [1, 2], c \in [-2, 7],$ and $d \in [-3.5, 0.4]$

E. None of the above.