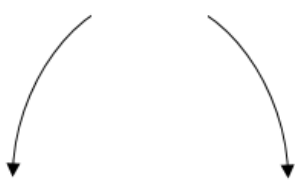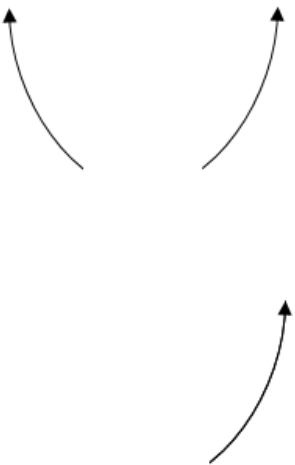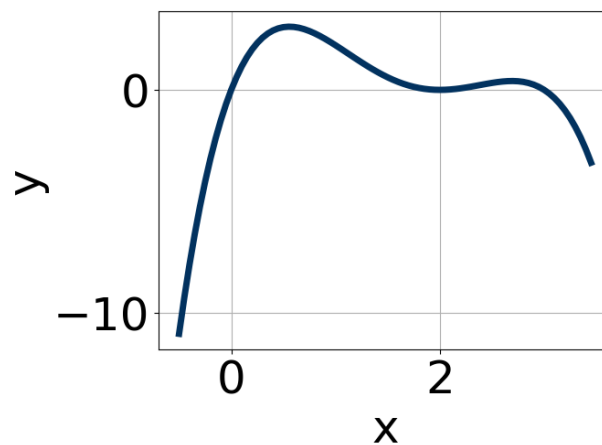1. Describe the end behavior of the polynomial below.

$$f(x) = -3(x-8)^5(x+8)^{10}(x-6)^3(x+6)^5$$

C.

A.

B.   D.

E. None of the above.

---

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

A. $20x^9(x-2)^6(x-3)^6$

B. $-3x^6(x-2)^{11}(x-3)^{11}$

  C. $14x^9(x-2)^6(x-3)^7$

  D. $-19x^6(x-2)^{10}(x-3)^9$

  E. $-13x^5(x-2)^8(x-3)^9$

---

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

$$7, \frac{-4}{5}, \text{ and } \frac{-3}{2}$$

  A. $a \in [8,12], b \in [88,101], c \in [170,175], \text{ and } d \in [81,90]$

  B. $a \in [8,12], b \in [-49,-45], c \in [-149,-146], \text{ and } d \in [-84,-79]$

  C. $a \in [8,12], b \in [44,52], c \in [-149,-146], \text{ and } d \in [81,90]$

  D. $a \in [8,12], b \in [76,78], c \in [36,43], \text{ and } d \in [-84,-79]$

  E. $a \in [8,12], b \in [-49,-45], c \in [-149,-146], \text{ and } d \in [81,90]$

---

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

$$4 - 2i \text{ and } 1$$

  A. $b \in [-5,6], c \in [-5,-1], \text{ and } d \in [-1,8]$

  B. $b \in [7,10], c \in [25,33], \text{ and } d \in [17,23]$

  C. $b \in [-5,6], c \in [-4,3], \text{ and } d \in [-4,-1]$

  D. $b \in [-12,-4], c \in [25,33], \text{ and } d \in [-21,-15]$
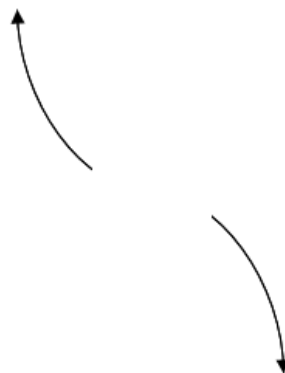
  E. None of the above.

---

5. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in

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

$$\frac{3}{5}, \frac{7}{2}, \text{ and } 3$$

A. $a \in [9, 13], b \in [-61, -58], c \in [60, 69], \text{ and } d \in [58, 67]$

B. $a \in [9, 13], b \in [65, 75], c \in [143, 149], \text{ and } d \in [58, 67]$

C. $a \in [9, 13], b \in [11, 13], c \in [-103, -100], \text{ and } d \in [-72, -62]$

D. $a \in [9, 13], b \in [-72, -62], c \in [143, 149], \text{ and } d \in [58, 67]$

E. $a \in [9, 13], b \in [-72, -62], c \in [143, 149], \text{ and } d \in [-72, -62]$

---

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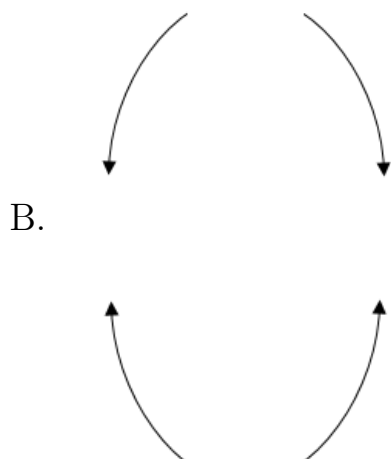
$$-3 - 5i \text{ and } -2$$

A. $b \in [-6, 3], c \in [4.7, 6.1], \text{ and } d \in [5.4, 9.1]$

B. $b \in [-6, 3], c \in [5.7, 8.3], \text{ and } d \in [8.4, 11.7]$

C. $b \in [-8, -2], c \in [44, 46.1], \text{ and } d \in [-69.7, -66.9]$

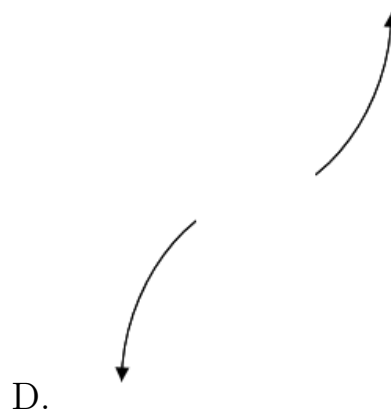D. $b \in [7, 15], c \in [44, 46.1], \text{ and } d \in [63.1, 71.7]$

E. None of the above.

---

7. Describe the end behavior of the polynomial below.
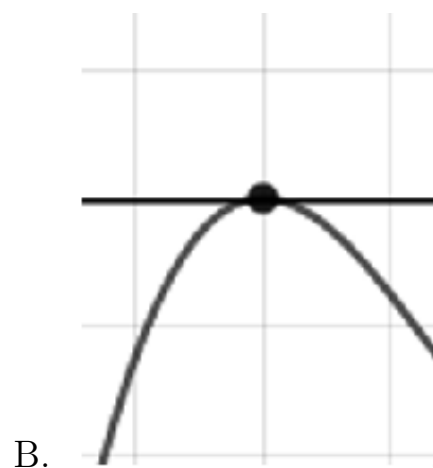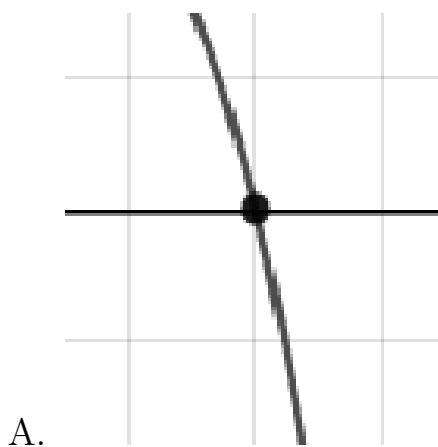
$$f(x) = 4(x + 2)^4(x - 2)^9(x + 9)^3(x - 9)^4$$
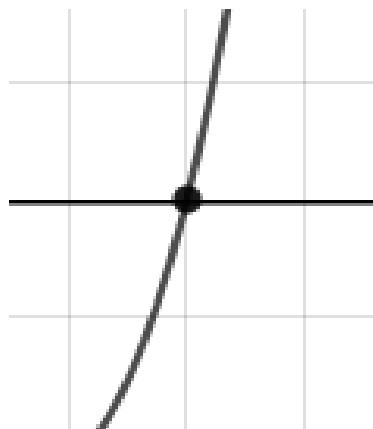
A.

B.

D.

C.

E. None of the above.

8. Describe the zero behavior of the zero $x = -2$ of the polynomial below.
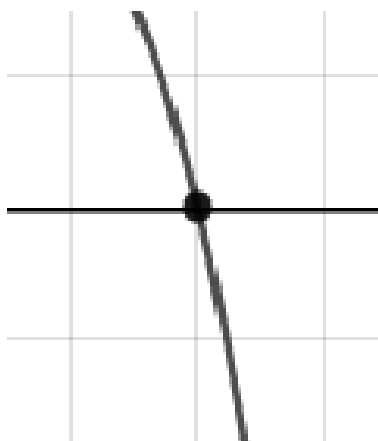
$$f(x) = -8(x-6)^{11}(x+6)^9(x-2)^5(x+2)^4$$

A.

B.

C.

D.

E. None of the above.

---

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

$$f(x) = -4(x+5)^9(x-5)^5(x+2)^{10}(x-2)^9$$
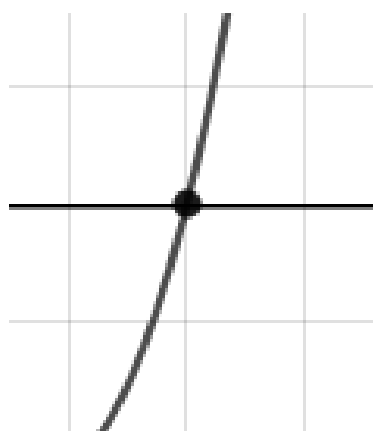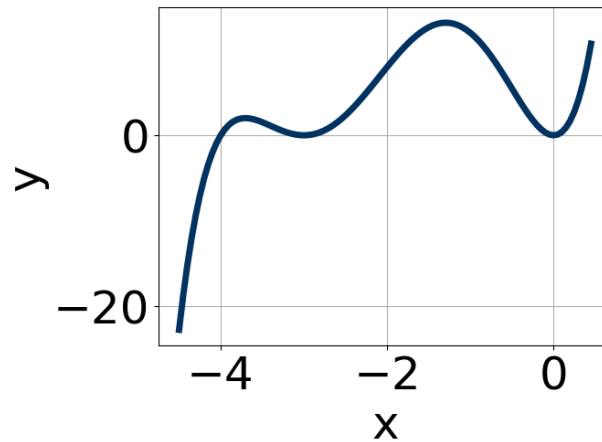

A.

C.

B.

D.

E. None of the above.

---

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

A. $-18x^{10}(x+3)^6(x+4)^8$

B. $7x^5(x+3)^6(x+4)^6$

C. $-14x^8(x+3)^{10}(x+4)^9$

D. $2x^5(x+3)^{10}(x+4)^7$

E. $19x^6(x+3)^8(x+4)^{11}$