



Identify repeated zeros and their graphical behaviour

- 1** Does the sign of this polynomial change at $x = 2$?

$$(x + 2)(x - 1)$$

A

No

B

Yes

- 2** Does the sign of this polynomial change at $x = 4$?

$$(x + 1)(x - 4)^2$$

A

No

B

Yes

- 3** Which graph shows these roots and multiplicities?

$$x = -1 \text{ (multiplicity 3)}$$

$$x = 1 \text{ (multiplicity 3)}$$

A



B



C



D



- 4** Which graph shows the x-intercept behaviour of this function?

$$f(x) = (x + 1)^4(x - 1)$$

A



B



C



D



- 5** What roots and multiplicities would create this x-intercept behaviour?

at $x = -3$: crosses the x -axis

at $x = -1$: touches the x -axis without crossing and flattens

A

$$x = 1 \text{ (multiplicity 4)}$$

$$x = 3 \text{ (multiplicity 1)}$$

B

$$x = 1 \text{ (multiplicity 1)}$$

$$x = 4 \text{ (multiplicity 1)}$$

C

$$x = -3 \text{ (multiplicity 4)}$$

$$x = -1 \text{ (multiplicity 1)}$$

D

$$x = -3 \text{ (multiplicity 1)}$$

$$x = -1 \text{ (multiplicity 4)}$$

E

$$x = -2 \text{ (multiplicity 1)}$$

$$x = -1 \text{ (multiplicity 4)}$$



Identify repeated zeros and their graphical behaviour

6

What x-intercept behaviour would these roots and multiplicities create?

$$x = -2 \text{ (multiplicity 3)}$$

$$x = 2 \text{ (multiplicity 4)}$$

Aat $x = -2$: crosses the x-axis and flattensat $x = 2$: touches the x-axis without crossing and flattens**B**at $x = -2$: crosses the x-axis and flattensat $x = 2$: crosses the x-axis and flattens**C**at $x = 3$: crosses the x-axisat $x = 4$: touches the x-axis without crossing**D**at $x = -2$: touches the x-axis without crossing and flattensat $x = 2$: touches the x-axis without crossing and flattens**7**

Which function and intercept would show this x-intercept behaviour?

touches the x-axis without crossing

A

$$f(x) = (x + 3)^2(x - 1)^3$$

$$\text{at } x = -3$$

B

$$f(x) = (x + 3)^2(x - 1)^3$$

$$\text{at } x = 1$$

8

Which graph shows these roots and multiplicities?

$$x = -2 \text{ (multiplicity 4)}$$

$$x = 1 \text{ (multiplicity 3)}$$

A**B****C****D****9**

Which graph shows the x-intercept behaviour of this function?

$$f(x) = (x - 1)^2(x - 3)^2$$

A**B****C****D**



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10

What roots and multiplicities would create this x-intercept behaviour?

at $x = -1$: crosses the x – axis and flattensat $x = 1$: crosses the x – axis

A

 $x = 1$ (multiplicity 1)
 $x = 3$ (multiplicity 1)

B

 $x = -1$ (multiplicity 2)
 $x = 1$ (multiplicity 1)

C

 $x = -1$ (multiplicity 3)
 $x = 1$ (multiplicity 1)

D

 $x = -1$ (multiplicity 1)
 $x = 1$ (multiplicity 3)

E

 $x = -1$ (multiplicity 4)
 $x = 1$ (multiplicity 1)**11**

What x-intercept behaviour would these roots and multiplicities create?

 $x = -2$ (multiplicity 1) $x = 3$ (multiplicity 3)

A

at $x = -2$: crosses the x – axis
at $x = 3$: crosses the x – axis and flattens

B

at $x = -1$: crosses the x – axis
at $x = 3$: crosses the x – axis and flattens

C

at $x = -3$: crosses the x – axis and flattens
at $x = 2$: crosses the x – axis

D

at $x = -2$: crosses the x – axis and flattens
at $x = 3$: crosses the x – axis