Name

Sketch polynomial functions using zeros and multiplicities



1 What behaviour would this function have at its x-intercepts?

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

A

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

B

at $x = -3$: crosses the x − axis and flattens
at $x = 3$: touches the x − axis without crossing

C

at $x = -3$: touches the x − axis without crossing
at $x = 3$: crosses the x − axis and flattens

D

at $x = -3$: touches the x − axis without crossing
at $x = 3$: touches the x − axis without crossing

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

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

A

at $x = -3$: touches the x − axis without crossing
at $x = 3$: crosses the x − axis and flattens

B

at $x = -3$: touches the x − axis without crossing
at $x = 3$: touches the x − axis without crossing

C

at $x = -3$: crosses the x − axis and flattens
at $x = 3$: touches the x − axis without crossing

D

at $x = -3$: touches the x − axis without crossing
at $x = 3$: crosses the x − axis

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3 Is this statement true or false?

$f(x) = (x+2)(x+1)$

At $x = -1$ the graph crosses the x − axis.

A	B
False	True

4 Which function would have this x-intercept behaviour?

at $x = 0$: crosses the x − axis and flattens

at $x = 2$: touches the x − axis without crossing

A $f(x) = (x+2)^2x^3$	B $f(x) = x^2(x-2)^3$
C $f(x) = x^3(x-2)^2$	D $f(x) = (x-2)^2(x-3)$
E $f(x) = x^2(x-2)^2$	

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

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

at $x = 3$: crosses the x − axis and flattens

A

$x = -1$ (multiplicity 3)

$x = 3$ (multiplicity 3)

B

$x = -3$ (multiplicity 3)

$x = 1$ (multiplicity 3)

C

$x = 1$ (multiplicity 3)

$x = 3$ (multiplicity 3)

D

$x = -1$ (multiplicity 3)

$x = 2$ (multiplicity 3)

E

$x = -3$ (multiplicity 3)

$x = -1$ (multiplicity 3)

6 What end behaviour would this function have?

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

A

as $x \to -\infty, y \to -\infty$

as $x \to \infty, y \to \infty$

B

as $x \to -\infty, y \to \infty$

as $x \to \infty, y \to \infty$

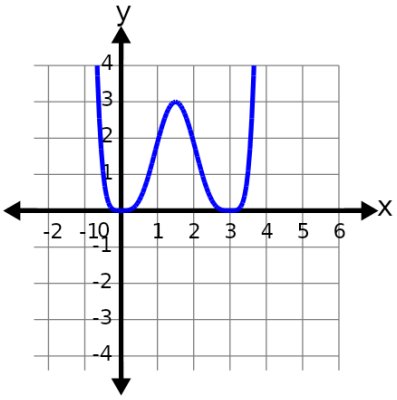
7 What end behaviour criteria is correct for this function?

$f(x) = 4x - 3$

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8 What are the roots and multiplicities shown by this graph?



A
$x = -1$ (multiplicity 4)
$x = 3$ (multiplicity 4)

B
$x = 1$ (multiplicity 4)
$x = 3$ (multiplicity 4)

C
$x = 0$ (multiplicity 4)
$x = 3$ (multiplicity 4)

D
$x = -3$ (multiplicity 4)
$x = 0$ (multiplicity 4)

9 Which function has these roots and multiplicities?

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

A
$f(x) = (x+3)(x-3)$

B
$f(x) = (x+2)(x-3)$

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

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

10 Which function (based on its powers and coefficents) would have this end behaviour?

as $x \to -\infty, y \to -\infty$
as $x \to \infty, y \to \infty$

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

B
$f(x) = 3x^7 + 2x^6 + 2x^5$

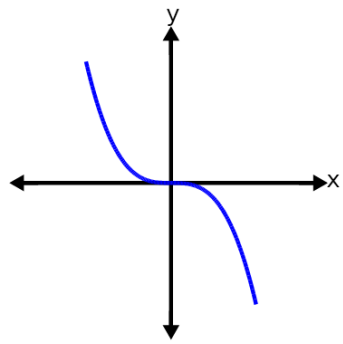
11 Which highest power and leading coefficient fits this end behaviour description?

Name

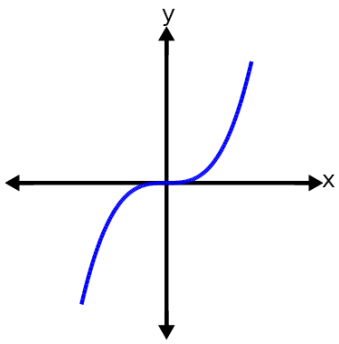
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12 Which graph's end behaviour would this power and coefficient create?

A



B



13 What does this graph's end behaviour tell us about its highest power and leading coefficient?

