



## Function Root Behaviour (Polynomials) - Behaviour to Function

1 at  $x = -3$ : touches the x-axis without crossing and flattens  
at  $x = -2$ : crosses the x-axis

Which function would have this x-intercept behaviour?

A	B	C	D	E
$f(x) = (x+3)(x+2)^4$	$f(x) = (x+3)^2(x+2)^3$	$f(x) = (x-1)(x-4)$	$f(x) = (x+3)^4(x+2)$	$f(x) = (x-2)(x-3)^4$

2 Which function would have this x-intercept behaviour?

at  $x = -3$ : touches the x-axis without crossing  
at  $x = -2$ : crosses the x-axis and flattens

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

3 Which function would have this x-intercept behaviour?

at  $x = -1$ : crosses the x-axis  
at  $x = 2$ : crosses the x-axis and flattens

A	B
$f(x) = (x+2)^3(x-1)$	$f(x) = (x+1)(x-1)^3$
C	D
$f(x) = (x-1)(x-3)^2$	$f(x) = (x+1)(x-2)^3$
E	
$f(x) = (x+1)^3(x-2)$	

4 Which function would have this x-intercept behaviour?

at  $x = -3$ : crosses the x-axis  
at  $x = 0$ : crosses the x-axis and flattens

A	B
$f(x) = (x-1)(x-3)$	$f(x) = x^3(x-3)$
C	D
$f(x) = (x+3)^3x$	$f(x) = (x+3)x^3$
E	
$f(x) = (x+2)x^3$	

5 Which function would have this x-intercept behaviour?

at  $x = 0$ : touches the x-axis without crossing  
at  $x = 3$ : crosses the x-axis and flattens

A	B
$f(x) = x^3(x-3)^2$	$f(x) = (x-2)(x-3)^3$
C	D
$f(x) = (x+3)^3x^2$	$f(x) = x^2(x-3)^3$
E	
$f(x) = (x+1)^2(x-3)^3$	

6 Which function would have this x-intercept behaviour?

at  $x = -3$ : crosses the x-axis and flattens  
at  $x = 2$ : touches the x-axis without crossing

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

7 Which function would have this x-intercept behaviour?

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

A	B
$f(x) = (x-2)^3(x-3)^3$	$f(x) = (x+3)^3(x-2)^3$
C	D
$f(x) = (x+3)^3(x+2)^3$	$f(x) = (x-1)^4(x-3)^2$
E	
$f(x) = (x+2)^3(x-3)^3$	

8 Which function would have this x-intercept behaviour?

at  $x = -3$ : crosses the x-axis and flattens  
at  $x = 1$ : touches the x-axis without crossing

A	B
$f(x) = (x+3)^2(x-1)^3$	$f(x) = (x+3)^3(x-1)^2$
C	D
$f(x) = (x+1)^2(x-3)^3$	$f(x) = (x-2)(x-3)$
E	
$f(x) = (x+3)^3(x-2)^2$	