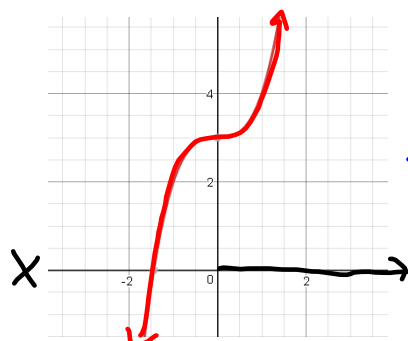


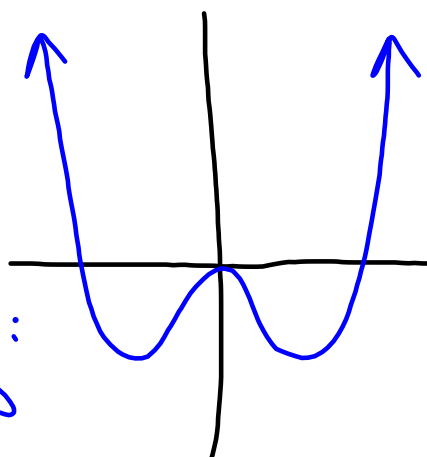
Happy Thursday, October 20

Do Now: Find the end behavior of the graph and the number of turning points.



$x \rightarrow \infty$ ∞
~~Far right:~~ \uparrow
~~Far left:~~ \downarrow
 $x \rightarrow -\infty$ $-\infty$

Oct 20-9:51 AM



Far right:
 \uparrow

Far left:
 \uparrow

$x \rightarrow \infty$ ∞
 $x \rightarrow -\infty$ ∞

Oct 20-10:27 AM

Graphing with Groot

Roots are the places where:

the graph ^{touches} crosses
the x-axis



We find roots by: $f(x) = (x+1)(x-2)$

Set polynomial = 0

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$y =$

$$f(\text{input}) = (\text{input})^2$$

$$f(\text{dirty clothes}) = \text{clean clothes}$$

$$f(x) = x^2 + 6x - 1$$

$f(2)?$

$$f(2) = 2^2 + 6(2) - 1$$

$$= 4 + 12 - 1$$

$$= 15$$

$$f(\text{cat}) = (\text{cat})^2 + 6(\text{cat}) - 1$$

Oct 20-10:33 AM

Sometimes we get double

(g)Roots!



Oct 20-9:56 AM

Find Roots

<p>Group 1</p> <p>$f(x) = (x-2)(x+1)(3x-2)$</p> <p>2 -1 $3/2$ $2/3$</p>	<p>Group 2</p> <p>$f(x) = (x+2)(x-1)(3x+2)$</p> <p>$x = -2$ $x = 1$ $x = -2/3$</p>	<p>Group 3</p> <p>$f(x) = (x+4)(x+1)^2$</p> <p>$x = -4$ $x = -1$ $x = -1$</p>	<p>Group 4</p> <p>$f(x) = x(x-2)(3x+4)$</p> <p>$x = 0$ $x = 2$ $x = -4/3$</p>
<p>Group 5</p> <p>$f(x) = (x-2)^2(x+4)$</p> <p>2 2 -4</p>	<p>Group 6</p> <p>$f(x) = x^2(x+3)$</p> <p>$x = -3$ $x = 0$ $x = 0$</p>	<p>Group 7</p> <p>$f(x) = (3x-2)(3x-2)$</p> <p>$x = -2/3$</p>	<p>Group 8</p> <p>$f(x) = (x-3)^2(x+1)^2$</p> <p>+3 -1 +3 -1</p>

Oct 20-9:57 AM

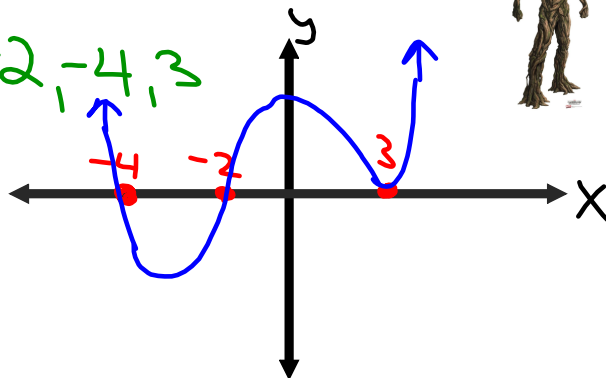
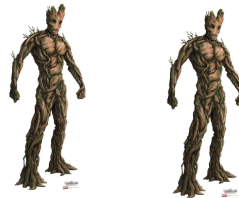
$$(x+1)^2 = (x+1)(x+1)$$

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

Roots:

$$x = 3, -2, -4, 3$$

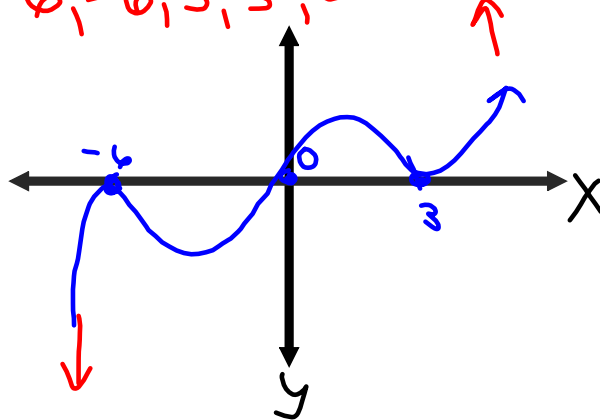
You can't get through a double
Root!

Oct 20-10:02 AM

$$f(x) = x(x+6)(x+6)(x-3)(x-3)$$

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

Roots: $-6, -6, 3, 3, 0$



Oct 20-10:02 AM

$$(x+5)(x+1)$$

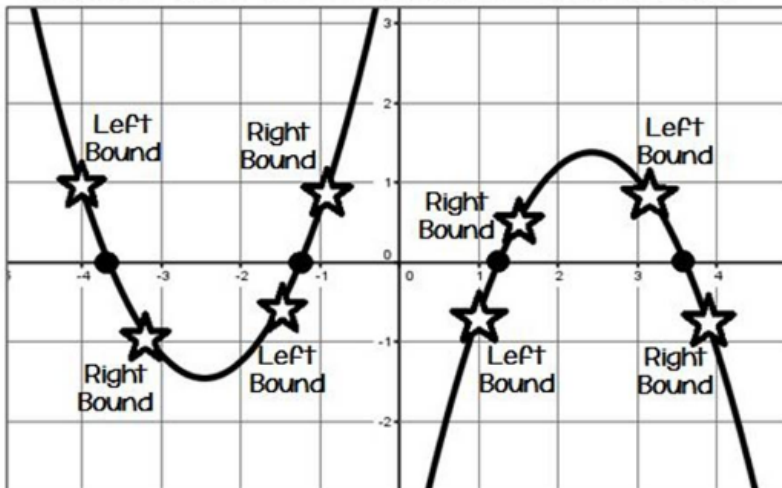
-5 -1

desmos

Graphing Calculator:

$$y = x^2 + 6x + 5$$

FINDING ZEROS WITH THE GRAPHING CALCULATOR

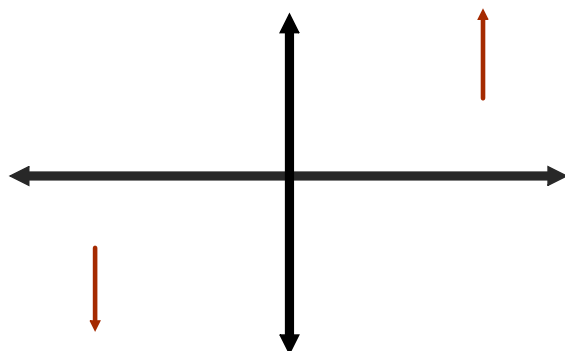


- 1) Hit: y=
- 2) Type in equation
- 3) Hit "graph"

Oct 20-10:10 AM

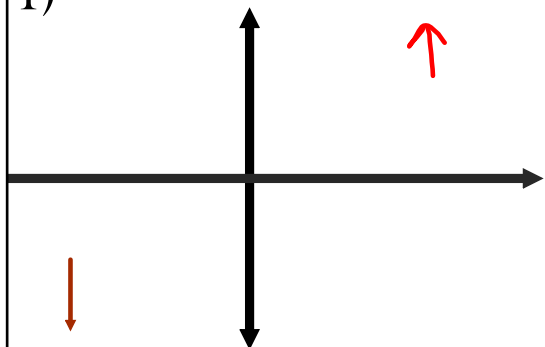
Exit Slip: $f(x) = (x + 3)(x - 2)^2$

Where are the roots? Sketch the graph, label x and y axis.

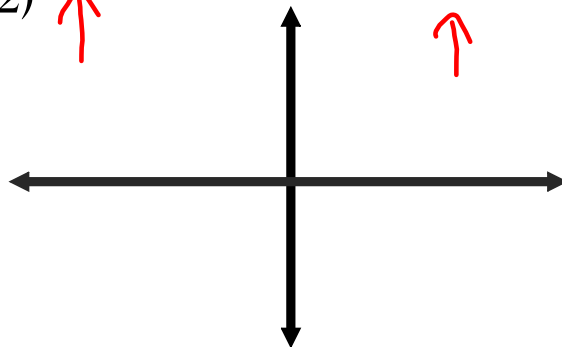


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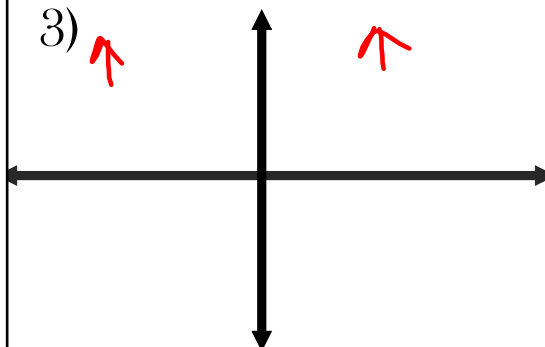
1)



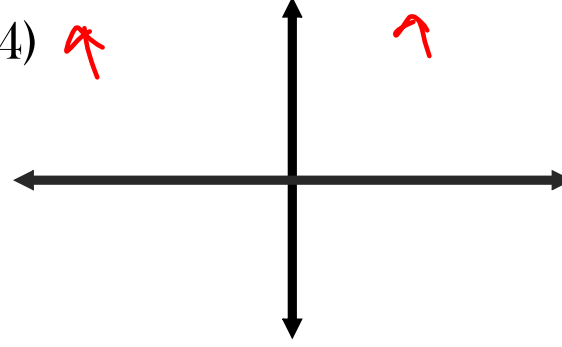
2)



3)



4)



Oct 20-10:05 AM

Group 1

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

Group 2

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

Group 3

$$f(x) = (x+4)(x+1)^2$$

Group 4

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

Group 5

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

Group 6

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

Group 7

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

Group 8

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

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