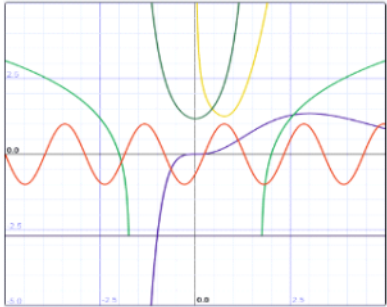


Lesson 8 Finding the Rule with Zeros and a Point

Date:

Chapter 4: Linear and Quadratic Functions:



Lesson 8:

Find Rule with Zeros and a Point

recall factored form

$$f(x) = a(x - \text{zero}_1)(x - \text{zero}_2)$$

$$f(x) = a(x - z_1)(x - z_2)$$

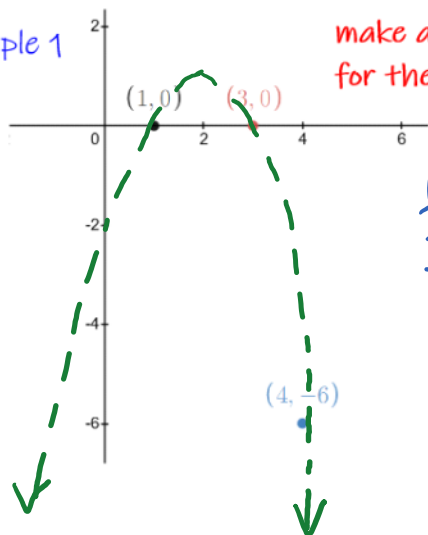
to general form: EXPAND

to standard form

$$\textcircled{1} h = \frac{z_1 + z_2}{2} \rightarrow \textcircled{2} k = f(h)$$

Determine the rule, when we know 2 zeros and one point

example 1

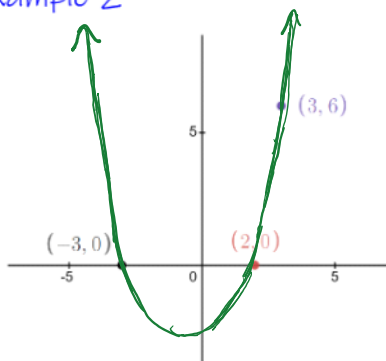


make a prediction
for the sign of "a" *negative*

$$\begin{aligned}f(x) &= a(x-z_1)(x-z_2) \\ -b &= a(4-1)(4-3) \\ -b &= a(3)(1) \\ -b &= 3a \\ a &= -2\end{aligned}$$

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

example 2



$$f(x) = a(x-z_1)(x-z_2)$$

$$b = a(3-(-3))(3-2)$$

$$6 = a(3+3)(3-2)$$

$$6 = a(6)(1)$$

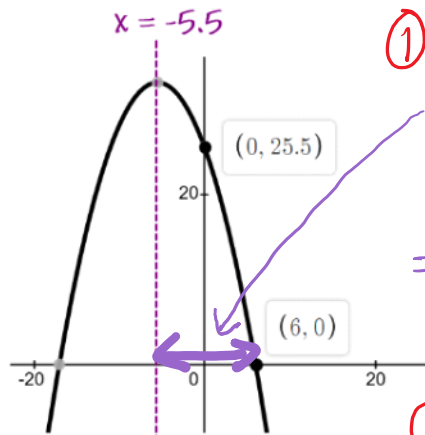
$$6 = 6a$$

$$1 = a$$

predicted "a" would be +

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

example 3 you can sometimes deduce (figure out!) the zeros



① distance from zero to h
 $z - h$
 $= 6 - (-5.5)$
 $6 + 5.5$
11.5

② distance between 2 zeros
 $11.5 \times 2 = 23$
 $6 - 23 = -17$

③ $f(x) = a(x - z_1)(x - z_2)$
 $25.5 = a(0 - 6)(0 + 17)$
 $25.5 = -102a$
 $a = -.25$

④ $f(x) = -.25(x - 6)(x + 17)$

you can now do:

WB

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