

September 30, 2016
 Difference quotient
 $f(x+h) - f(x)$
 h = horizontal change
 $f(x) = x^2 + 2x + 1$
 $(x+h)^2 + 2(x+h) + 1 - (x^2 + 2x + 1)$
 FOIL
 $(x+h)(x+h) + 2x + 2h + 1 - x^2 - 2x - 1$
 $x^2 + xh + hx + h^2 + 2x + 2h + 1 - x^2 - 2x - 1$
 $xh + hx + h^2 + 2h$ factor out something
 $h(2x + h + 2)$
 $2x + h + 2$

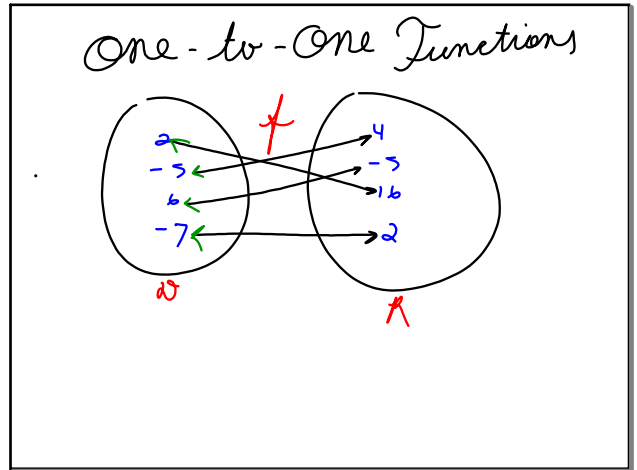
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$f(5) = (5)^2 + 2(5) + 1$
 $f(x+h) = (x+h)^2 + 2(x+h) + 1$

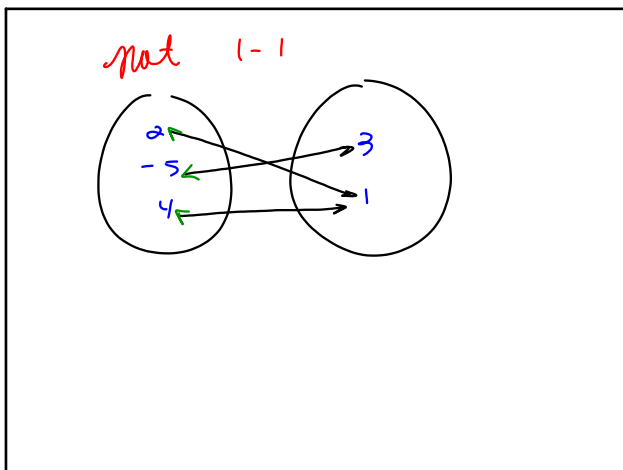
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$f(x) = 2x - 3$
 $2(x+h) - 3 - (2x - 3)$
 h
 $2x + 2h - 3 - 2x + 3$
 h
 $2h = 2$

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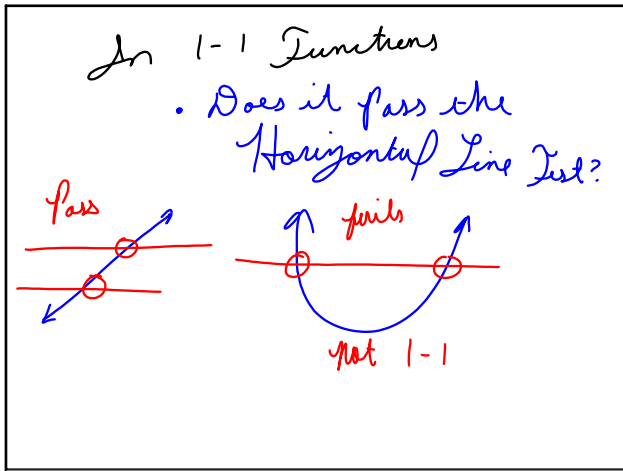
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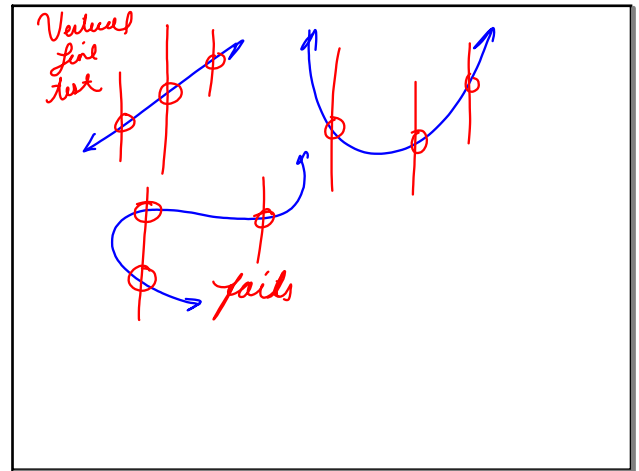
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Relation: ordered pairs
 $(2, 2), (3, 7), (4, 11)$
 Function
 $(2, 5), (3, 7), (4, 11)$ is a function
 $(2, 5), (3, 7), (2, -13)$ not a function

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