

WOW – Discontinuity (WORDS OF WISDOM)

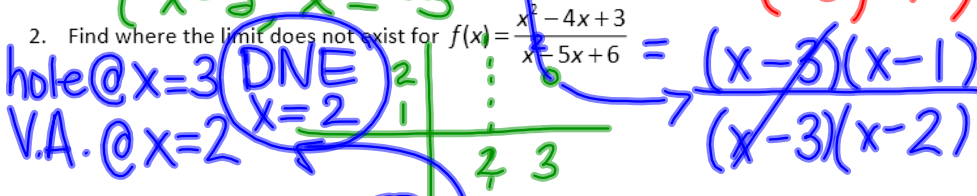
1. Name the points where this function has a removable discontinuity and redefine the function so that it is

continuous.  $f(x) = \frac{x^2 - 25}{x + 5} = \frac{(x-5)(x+5)}{x+5}$  hole @  $x = -5$

$$f(x) = \begin{cases} \frac{x^2 - 25}{x + 5}, & x \neq -5 \\ x - 5, & x = -5 \end{cases}$$

hole @  $x = -5$   
 $(-5, -10)$

2. Find where the limit does not exist for  $f(x) = \frac{x^2 - 4x + 3}{x^2 - 5x + 6} = \frac{(x-3)(x-1)}{(x-3)(x-2)}$



3. Are the functions continuous at  $x = 2$  (yes or no) Explain why using the definition of continuity.

<p>a. <math>f(x) = \frac{2x^2 - 3x - 2}{x^2 - x - 2}</math></p> <p><math>(2x+1)(x-2)</math>  <math>(x-2)(x+1)</math>          hole <math>x=2</math></p> <p><b>NO</b>          1) <math>\times</math> not def <math>x=2</math></p>	<p><b>YES</b></p> <p>b. <math>f(x) = \frac{x^2}{x^2 - x + 6}</math></p> <p><math>(x-3)(x+2)</math></p> <p>1) <math>f(2)</math> is def. ✓          2) <math>\lim_{x \rightarrow 2}</math>          3) <math>f(2) = \lim_{x \rightarrow 2}</math></p>	<p><b>NO</b></p> <p>c. <math>f(x) = \frac{ x+6 }{x-2}</math></p> <p>1) not defined @ <math>x=2</math></p>
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<p>a. <math>f(x) = \frac{2x^2 - 3x - 2}{x^2 - x - 2}</math></p>	<p>b. <math>f(x) = \frac{x^2}{x^2 - x + 6}</math></p>	<p>c. <math>f(x) = \frac{ x+6 }{x-2}</math></p>
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