M408C Calculus

Stepp

WS

1. Calculate the following limits. If the limit doesn't exist, write "DNE".

   (a) $\lim_{x \to 5} \dfrac{x^2 - 6x + 5}{x - 5}$

   (b) $\lim_{t \to 0} \dfrac{1}{t} - \dfrac{1}{t^2 + t}$

   (c) $\lim_{z \to 4} \dfrac{\frac{1}{4} + \frac{1}{z}}{4 + z}$

2. Calculate the following limits. If the limit doesn't exist, write "DNE".

   (a) $\lim_{u \to 2} \dfrac{\sqrt{4u+1} - 3}{u - 2}$

   (b) $\lim_{x \to -4} \dfrac{\sqrt{x^2+9} - 5}{x + 4}$

   (c) $\lim_{x \to 16} \dfrac{4 - \sqrt{x}}{16x - x^2}$

3. Calculate the following limits. If the limit doesn't exist, write "DNE".

   (a) $\lim_{x \to 0} \dfrac{\sin(3x)}{x}$

   (b) $\lim_{t \to 0} \dfrac{\sin(3t)\sin(5t)}{t^2}$

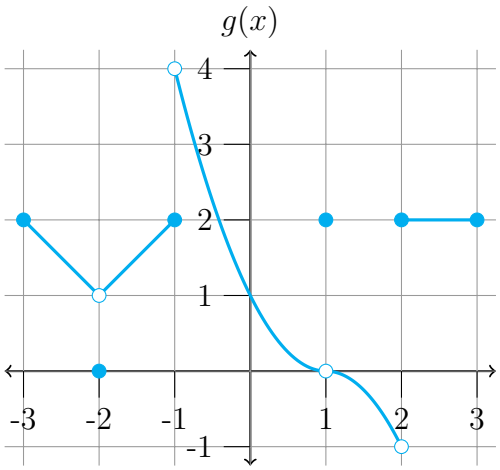
   (c) $\lim_{\theta \to 0} \dfrac{\tan(4\theta)}{2}$

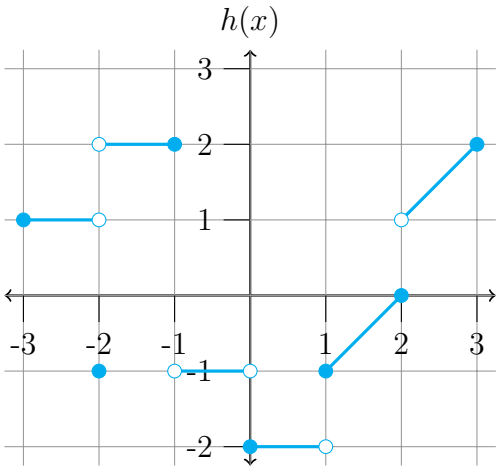
4. Calculate the following limits. If the limit doesn't exist, write "DNE".

   (a) $\lim_{x \to 2} \dfrac{x^2 \left|3x - 6\right|}{x - 2}$

   (b) $\lim_{x \to 1} \left|e^{x-1} - 1\right| \cos\left(\dfrac{1}{x-1}\right)$

5. The graphs of the functions $g(x)$ and $h(x)$ are given below. Determine if each of the following limits exist.





(a) $\lim_{x \to -2} g\left(h\left(x\right)\right)$

(b) $\lim_{x \to 1} h\left(g\left(x\right)\right)$