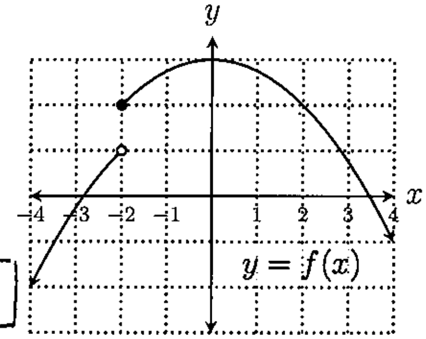
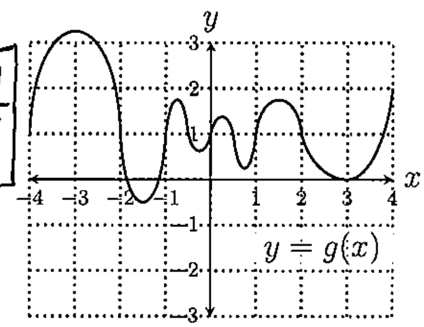
Name: Richard　　　　　　　　　QUIZ 1　　　　　　　　　MATH 200
August 21, 2025

1. Answer the questions about the functions $f(x)$ and $g(x)$ graphed below.





(a) $\lim_{x\to -2^+} 3f(x) = 3\lim_{x\to -2^+} f(x) = 3\cdot 2 = \boxed{6}$

(b) $\lim_{x\to 2} f(x)g(x) = \lim_{x\to 2} f(x)\cdot \lim_{x\to 2} g(x) = 2\cdot 1 = \boxed{2}$

(c) $\lim_{x\to 0} (f(x)+g(x)) = \lim_{x\to 0} f(x) + \lim_{x\to 2} g(x) = 3+1 = \boxed{4}$

(d) $\lim_{x\to 2} \dfrac{\log_4(x)}{f(x)} = \dfrac{\lim_{x\to 2} \log_4(x)}{\lim_{x\to 2} f(x)} = \dfrac{\log_4(2)}{2} = \dfrac{\frac{1}{2}}{2} = \boxed{\frac{1}{4}}$

(e) $\lim_{x\to 0} (f(x)+g(x))^{3/2} = \left(\lim_{x\to 0} f(x) + \lim_{x\to 0} g(x)\right)^{3/2}$

$= \sqrt{3+1}^{\,3} = \sqrt{4}^{\,3} = 2^3 = \boxed{8}$

2. $\lim_{x\to -3} \dfrac{5x^2-x+3}{2x+7} = \dfrac{\lim_{x\to -3} 5x^2-x+3}{\lim_{x\to -3} 2x+7} = \dfrac{5(-3)^2-(-3)+3}{2(-3)+7} = \dfrac{51}{1} = \boxed{51}$

3. $\lim_{x\to 5} \dfrac{1}{\sqrt{x}+\sqrt{5}} = \dfrac{\lim_{x\to 5} 1}{\lim_{x\to 5} (\sqrt{x}+\sqrt{5})} = \dfrac{1}{\sqrt{5}+\sqrt{5}} = \boxed{\dfrac{1}{2\sqrt{5}}} = \boxed{\dfrac{\sqrt{5}}{10}}$

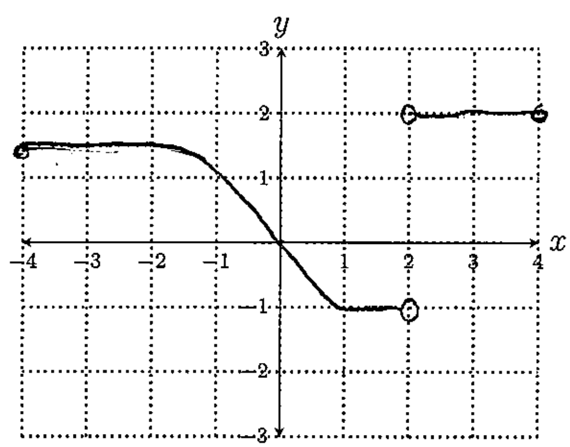
4. Draw the graph of **one** function f, with domain $[-4,2)\cup(2,4]$, meeting the following conditions.

(a) $\lim_{x\to 2^+} f(x) = 2$

(b) $\lim_{x\to 2^-} f(x) = -1$

(c) $\lim_{x\to -2} f(x) = \dfrac{3}{2}$

(d) $\lim_{x\to 0} f(x) = 0$



Name: Richard

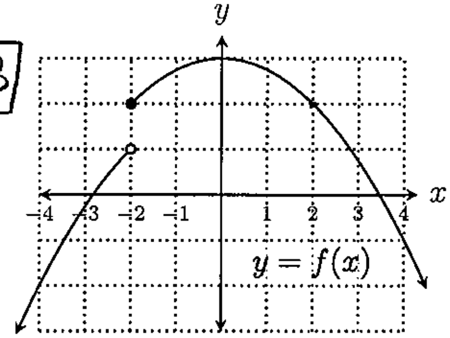
Quiz 1

MATH 200
August 21, 2025

1. Answer the questions about the functions $f(x)$ and $g(x)$ graphed below.

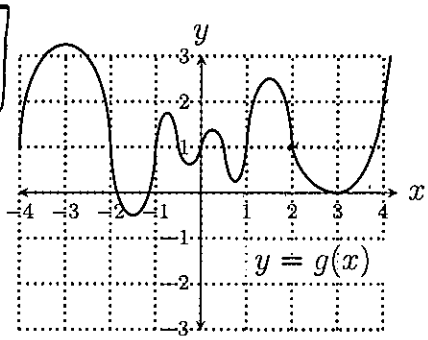
(a) $\lim\limits_{x\to -2^-} 3f(x) = 3\lim\limits_{x\to -2^-} f(x) = 3\cdot 1 = \boxed{3}$

(b) $\lim\limits_{x\to 2}(f(x)+g(x)) = \lim\limits_{x\to 2} f(x) + \lim\limits_{x\to 2} g(x) = 2+1 = \boxed{3}$



(c) $\lim\limits_{x\to 0} \dfrac{g(x)}{f(x)} = \dfrac{\lim\limits_{x\to 0} g(x)}{\lim\limits_{x\to 0} f(x)} = \boxed{\dfrac{1}{3}}$

(d) $\lim\limits_{x\to 0} \sqrt{f(x)g(x)} = \sqrt{\lim\limits_{x\to 0} f(x)\cdot \lim\limits_{x\to 0} g(x)} = \sqrt{3\cdot 1} = \boxed{\sqrt{3}}$



(e) $\lim\limits_{x\to 4} \dfrac{\log_4(x)}{g(x)} = \dfrac{\lim\limits_{x\to 4} \log_4(x)}{\lim\limits_{x\to 4} g(x)} = \dfrac{\log_4(4)}{2} = \boxed{\dfrac{1}{2}}$

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2. $\lim\limits_{x\to 2} \dfrac{2x+7}{5x^2-x+3} = \dfrac{2\cdot 2+7}{5\cdot 2^2-2+3} = \boxed{\dfrac{11}{21}}$ (limit of a rational function)

3. $\lim\limits_{x\to 3} \dfrac{\sqrt{3}}{\sqrt{x}+\sqrt{3}} = \dfrac{\lim\limits_{x\to 3} \sqrt{3}}{\lim\limits_{x\to 3} (\sqrt{x}+\sqrt{3})} = \dfrac{\sqrt{3}}{\sqrt{3}+\sqrt{3}} = \dfrac{\sqrt{3}}{2\sqrt{3}} = \boxed{\dfrac{1}{2}}$

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4. Draw the graph of **one** function f, with domain $[-4,0)\cup(0,4]$, meeting the following conditions.

(a) $\lim\limits_{x\to 0^+} f(x) = 1$

(b) $\lim\limits_{x\to 0^-} f(x) = -2$

(c) $\lim\limits_{x\to 2} f(x) = \dfrac{1}{2}$

(d) $\lim\limits_{x\to 1} f(x) = 0$