

## Limits Review – Lesson 3 Homework

I. Find each Limit

1.  $\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2}$

2.  $\lim_{x \rightarrow 3} \frac{x^2 + 2x - 15}{x - 3}$

3.  $\lim_{x \rightarrow 4} \frac{x^2 + 2x - 24}{x^2 - 2x - 8}$

4.  $\lim_{x \rightarrow -2} \frac{x^2 + 5x + 6}{x^2 + 6x + 8}$

5.  $\lim_{x \rightarrow 2} \frac{x^3 - 8}{x - 2}$

6.  $\lim_{x \rightarrow -3} \frac{x^3 + 27}{x + 3}$

7.  $\lim_{x \rightarrow 1} \frac{x^3 - 1}{x^2 - 1}$

8.  $\lim_{x \rightarrow -1} \frac{x^3 + 1}{x^2 - 1}$

9.  $\lim_{x \rightarrow 25} \frac{x - 25}{\sqrt{x} - 5}$

10.  $\lim_{x \rightarrow 1} \frac{x - 1}{\sqrt{x} - 1}$

11.  $\lim_{x \rightarrow 9} \frac{\sqrt{x} - 3}{x - 9}$

12.  $\lim_{h \rightarrow 0} \frac{\sqrt{4+h} - \sqrt{4}}{h}$

13.  $\lim_{h \rightarrow 0} \frac{\sqrt{25+h} - 5}{h}$

14.  $\lim_{h \rightarrow 0} \frac{\sqrt{16+h} - 4}{h}$

15.  $\lim_{h \rightarrow 0} \frac{10 - \sqrt{100-h}}{h}$

16.  $\lim_{h \rightarrow 0} \frac{\sqrt{x+h} - \sqrt{x}}{h}$

17.  $\lim_{h \rightarrow 0} \frac{h}{\sqrt{x} - \sqrt{x-h}}$

18.  $\lim_{x \rightarrow 2} \frac{\frac{1}{x} - \frac{1}{2}}{x - 2}$

19.  $\lim_{x \rightarrow 5} \frac{\frac{1}{x} - \frac{1}{5}}{x - 5}$

20.  $\lim_{x \rightarrow 1} \frac{\frac{1}{x} - 1}{x - 1}$

21.  $\lim_{h \rightarrow 0} \frac{\frac{1}{x+h} - \frac{1}{x}}{h}$

22.  $\lim_{h \rightarrow 0} \frac{\frac{1}{2+h} - \frac{1}{2}}{h}$

23.  $\lim_{h \rightarrow 0} \frac{\frac{1}{5+h} - \frac{1}{5}}{h}$

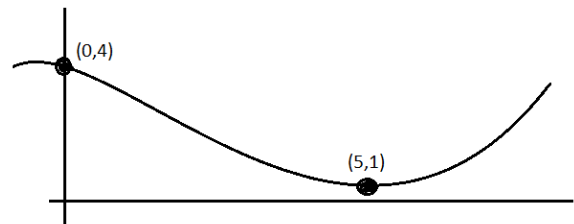
24.  $\lim_{h \rightarrow 0} \frac{\frac{1}{\frac{3}{3+h}} - \frac{1}{3}}{h}$

25.  $\lim_{x \rightarrow 2} \frac{\frac{1}{x^2} - \frac{1}{4}}{x - 2}$

26.  $\lim_{x \rightarrow 3} \frac{\frac{1}{x^2} - \frac{1}{9}}{x - 3}$

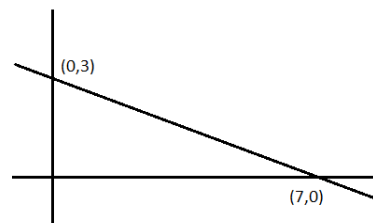
II. Find each using the graph

1. Graph is continuous and smooth



a)  $\lim_{x \rightarrow 0} f(x)$       b)  $\lim_{x \rightarrow 5} f(x)$

2. Graph is continuous and smooth

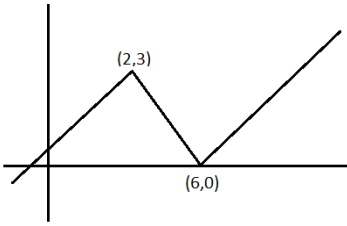


a)  $\lim_{x \rightarrow 0} g(x)$       b)  $\lim_{x \rightarrow 7} g(x)$

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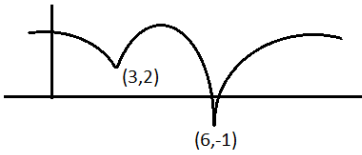
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3. Graph has a sharp bend



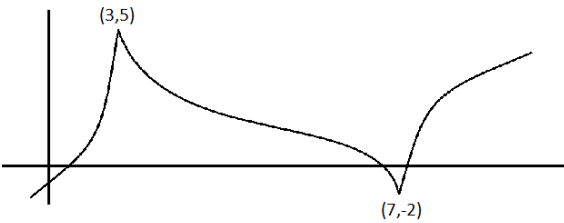
a)  $\lim_{x \rightarrow 2} h(x)$     b)  $\lim_{x \rightarrow 6} h(x)$

4. Graph has a sharp bend



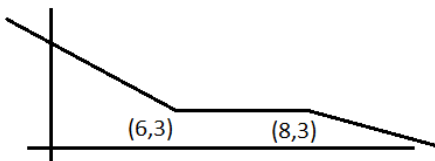
a)  $\lim_{x \rightarrow 3} f(x)$     b)  $\lim_{x \rightarrow 6} f(x)$

5. Graph has a sharp bend



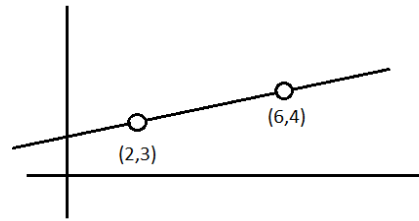
a)  $\lim_{x \rightarrow 3} s(x)$     b)  $\lim_{x \rightarrow 7} s(x)$

6. Graph has sharp bend



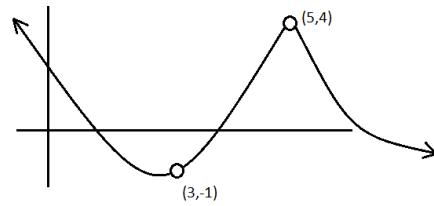
a)  $\lim_{x \rightarrow 6} f(x)$     b)  $\lim_{x \rightarrow 8} f(x)$

7. Graph has single point hole



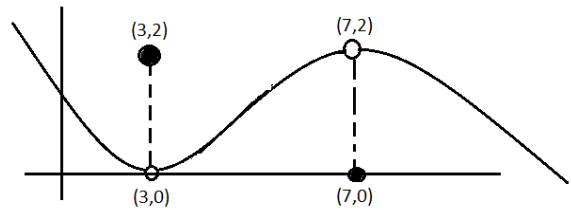
a)  $\lim_{x \rightarrow 2} g(x)$     b)  $\lim_{x \rightarrow 6} g(x)$

8. Graph has single point hole



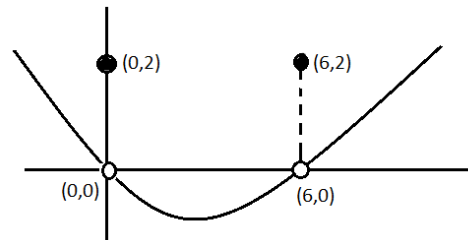
a)  $\lim_{x \rightarrow 3} h(x)$     b)  $\lim_{x \rightarrow 5} h(x)$

9. Graph has single point hole



a)  $\lim_{x \rightarrow 3} f(x)$     b)  $\lim_{x \rightarrow 7} f(x)$

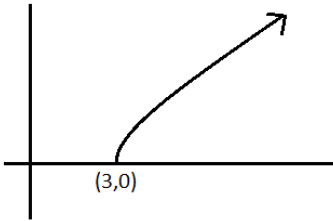
10. Graph has single point hole



a)  $\lim_{x \rightarrow 0} g(x)$     b)  $\lim_{x \rightarrow 6} g(x)$

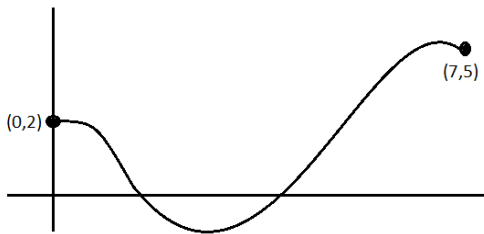
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11. Graph has endpoints



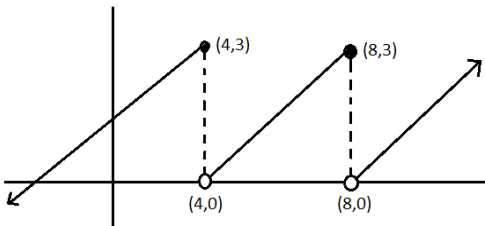
a)  $\lim_{x \rightarrow 3^+} g(x)$

12. Graph has endpoints



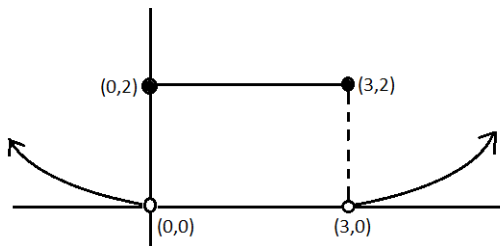
a)  $\lim_{x \rightarrow 0^+} f(x)$     b)  $\lim_{x \rightarrow 7^-} f(x)$

13. Graph has gap-jump



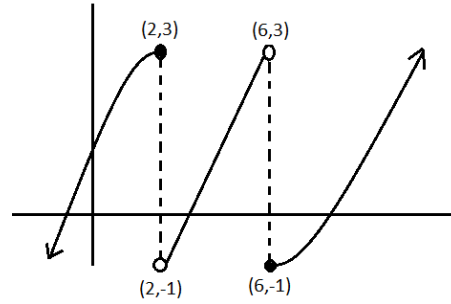
a)  $\lim_{x \rightarrow 4} f(x)$     b)  $\lim_{x \rightarrow 8} f(x)$

14. Graph has gap-jump



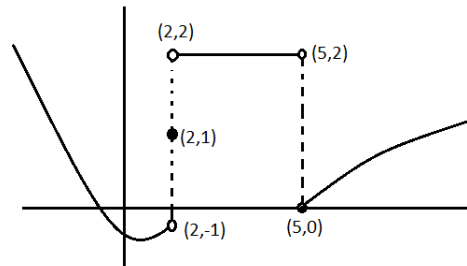
a)  $\lim_{x \rightarrow 0} g(x)$     b)  $\lim_{x \rightarrow 3} g(x)$

15. Graph has gap-jump



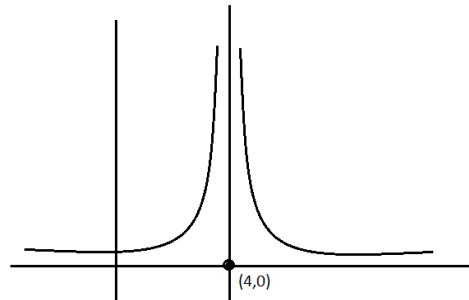
a)  $\lim_{x \rightarrow 2} k(x)$     b)  $\lim_{x \rightarrow 6} k(x)$

16. Graph has gap-jump



a)  $\lim_{x \rightarrow 2} t(x)$     b)  $\lim_{x \rightarrow 5} t(x)$

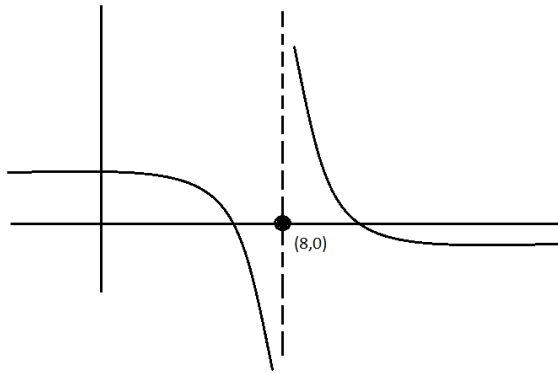
17. Graph tends to infinity



a)  $\lim_{x \rightarrow 4} f(x)$

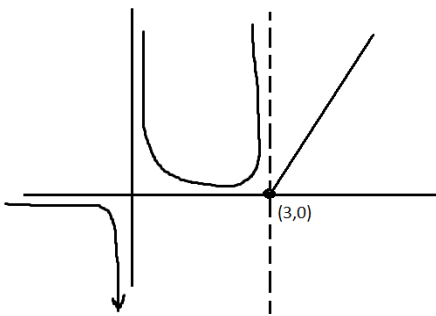
Limits Review – Lesson 3 Homework

18. Graph tends to infinity



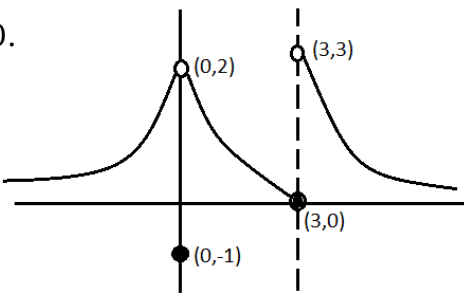
a)  $\lim_{x \rightarrow 8} g(x)$

19. Graph tends to infinity



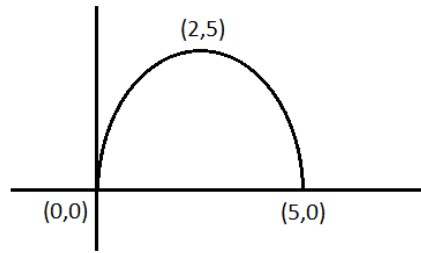
a)  $\lim_{x \rightarrow 0} f(x)$       b)  $\lim_{x \rightarrow 3} f(x)$

20.



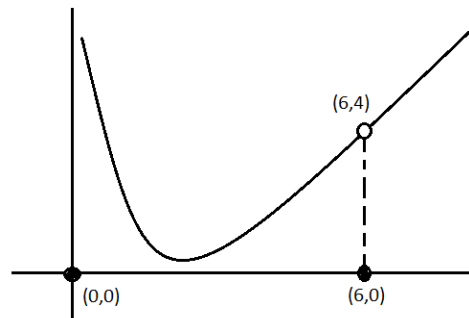
a)  $\lim_{x \rightarrow 0} g(x)$       b)  $\lim_{x \rightarrow 3} g(x)$

21.



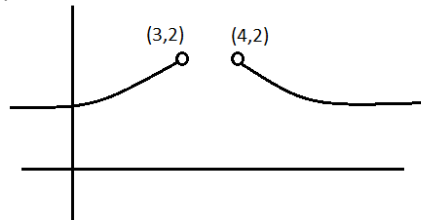
a)  $\lim_{x \rightarrow 5} h(x)$       b)  $\lim_{x \rightarrow 2} h(x)$

22.



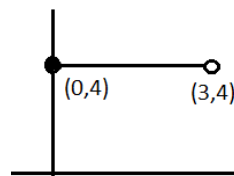
a)  $\lim_{x \rightarrow 0} m(x)$       b)  $\lim_{x \rightarrow 6} m(x)$

23.



a)  $\lim_{x \rightarrow 3} r(x)$       b)  $\lim_{x \rightarrow 4} r(x)$

24.



a)  $\lim_{x \rightarrow 0} z(x)$       b)  $\lim_{x \rightarrow 3} z(x)$