

You must show work!! 20 points

Find the limit, if exists. Write infinity if the limit is infinite. I meant the symbol for infinity, ∞ .

Note: Limits are like proofs. You must write out each step.

1. $\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$ by definition.

1.

2. $\lim_{x \rightarrow 3} \sqrt[3]{x-3} = \sqrt[3]{3-3} = \sqrt[3]{0} = 0$

2.

No issues because of odd root. i.e. Continuous function.

3. $\lim_{x \rightarrow 2} \frac{|x-2|}{x-2} = dne$

3.

Because the left limit \neq the right limit.

4. $\lim_{x \rightarrow 3^-} \frac{1}{x-3} = -\infty$

4.

Plug in 2.99 and 2.999 or graph.

5. $\lim_{x \rightarrow 3} (x^2 - 2x + 1) = 3^2 - 2(3) + 1 = 9 - 6 + 1 = 4$

5.

Continuous function.

6. $\lim_{x \rightarrow -6} \frac{x^2 - 36}{x + 6} = \lim_{x \rightarrow -6} \frac{(x+6)(x-6)}{x+6}$
 $= \lim_{x \rightarrow -6} (x-6) = -6 - 6 = -12$

6.

7. $\lim_{x \rightarrow 3} 5 = 5$

7.

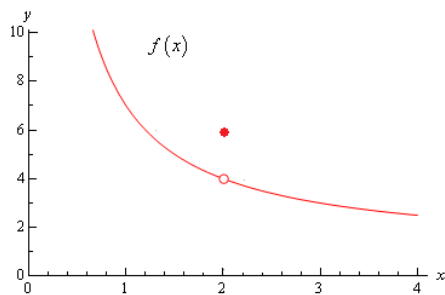
Constant function.

Use Graph Below. Approximate to nearest integer, if necessary.

8. $f(2) = 6$

9. $\lim_{x \rightarrow 2} f(x) = 4$

10. $\lim_{x \rightarrow 1} f(x) = 6$ (close to 6)



EC Pick and number between 1 and 2.

1.5 or any such number. Is 2 in between???