

Math Camp: Limits, Continuity, & Derivatives Worksheet
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Q1). Evaluate $\lim_{x \rightarrow 2} \frac{x^2 + 4x - 12}{x^2 - 2x}$ using a table of function values. That is, input different values of x to justify your answer.

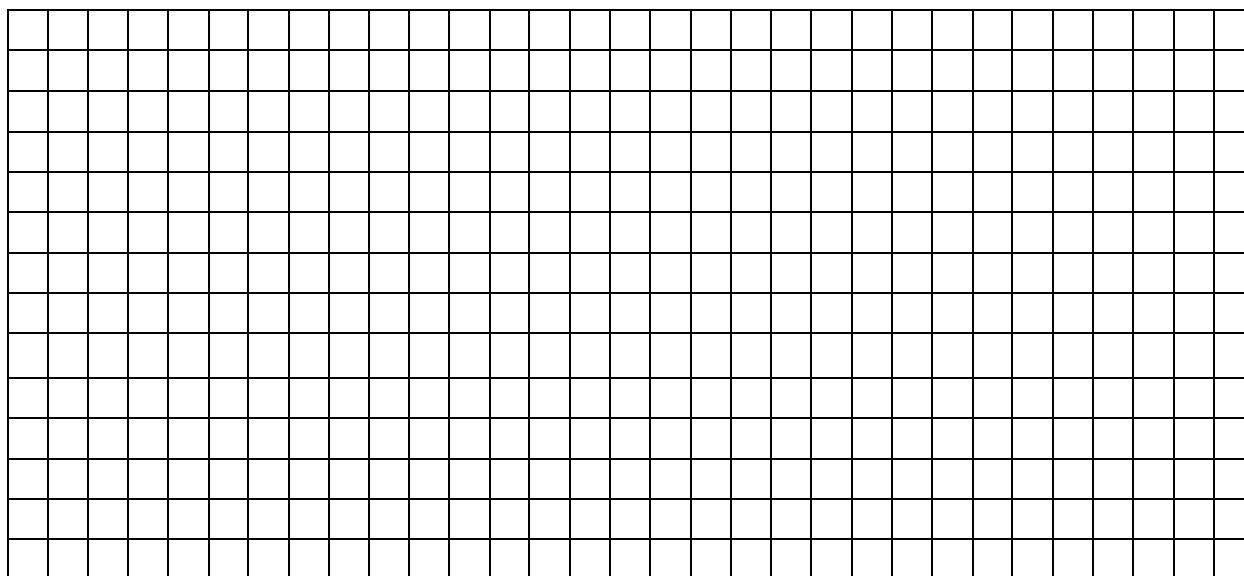
Q2). Determine whether the following function is continuous at $x = 2$ $f(x) = \frac{x^2 - 4}{x - 2}$
 Justify your conclusion algebraically and graphically.

Q3).

A). What is the first derivative of $f(x) = 4x^2$?

B). What is the second derivative of $f(x) = f(x) = 4x^2$?

C). Plot $f(x) = f(x) = 4x^2$ its first derivative, and its second derivative.



Q4).

A). What is the first derivative of $f(x) = e^x$?

B). What is the second derivative of $f(x) = e^x$?

C). What is the first derivative of $f(x) = 2e^x$?

D). What is the second derivative of $f(x) = 2e^x$?

Q5).

What is the first derivative of $f(x) = \log X$?

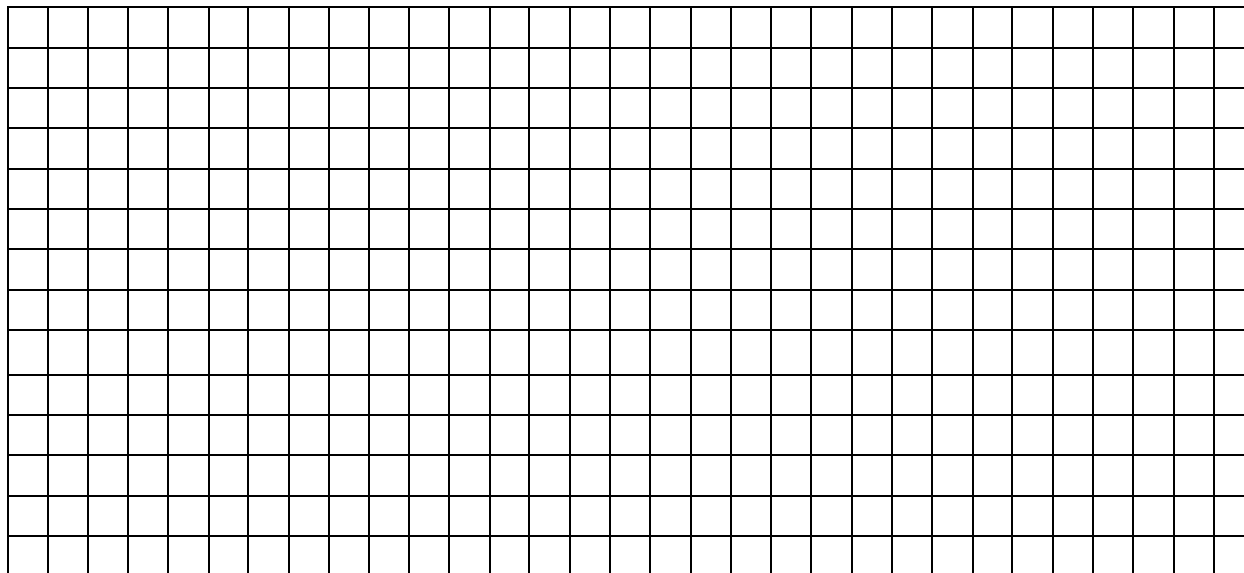
What is the second derivative $f(x) = \log X$?

Q6).

What is the first derivative of $f(x) = x^2 - 2x$?

What is the second derivative of $f(x) = x^2 - 2x$?

Plot $f(x) = x^2 - 2x$, its first derivative, and its second derivative.



Q7). Evaluate $\lim_{x \rightarrow 0} \frac{2(-3+x)^2 - 18}{x}$ using a table of function values. That is, input different values of x to justify your answer.

Q8). Determine whether the following function is continuous or discontinuous at the given

points: $f(x) = \frac{x^2 - 4}{x - 2}$

A). $x = -1$

B). $x = 0$

C). $x = 3$