Name_____

INTRO TO CALCULUS JOURNAL

1. (a) In terms of a graph, when you find $\lim_{x\to -4} f(x) = -1$, this means _____

   _____ while $f(-4) = 2$ means

   _____.

   (b) In terms of a graph, a limit does not exist (DNE) when _____

   _____while $f(3)$ is undefined means_____

   _____

   (c) Draw a sketch of a graph whose limit does not exist at point *a*.

   (d) An expression like $\frac{0}{0}$ which may result when evaluating a limit is called a(n) _____

   _____ because _____.

   (e) When a limit results in a value of $\frac{0}{0}$ value, you should try to _____

   OR _____.

2. (a) A derivative represents_____

   _____.

   (b) The power rule can only be used to find a derivative when _____

   _____ and _____.

   (c) The chain rule should be used when the function contains _____

   _____.

   (d) What change should be made to each of the following functions, before finding its derivative?

   $f(x) = \sqrt[3]{x^7}$ _____ $f(x) = \frac{1}{2x^8}$ _____

   $f(x) = \sqrt[3]{2x^6 - 4x^3 + 8}$ _____

3. (a) Another name for integration is _____.

   (b) The relationship between derivatives and integrals is _____

   _____.

   (c) When finding a derivative you should _____ the power, but you should

   _____ the power when integrating.

4. (a) An indefinite integral results in _____

   while a definite integral results in _____.

   (b) After performing the integration, the numerical value of a definite integral is found by _____

   _____.

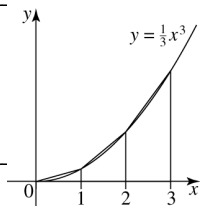
5. (a) In terms of a graph, integration represents _____

   _____.

(b) The long "S" symbol is used to indicate integration because it means _____

_____

(c) Write the expression needed to find the shaded area shown in the graph at right.



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(d) What change should be made to each of the following functions, before integrating it?

$\int (x^3 - 3x)(x^2 + 5)\, dx$ _____

$\int \frac{x^3 - 4x + 9}{x^2}\, dx$ _____

6. List the following formulas and operations.
   a) Definition of the Derivative (formula)

   b) Power rule for derivatives

   c) Product rule (in symbols and words)

   d) Quotient rule (in symbols and words)

   e) Chain rule with at least 3 functions

   f) Power rule for integrals