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## CALCULUS JOURNAL DERIVATIVES OF SPECIAL FUNCTIONS

1.	a) Implicit differentiation must be used when
	or when
	b) If you are finding $\frac{dp}{db}$ using implicit differentiation in a relation which contains the variables b, c,
	<i>p</i> , and <i>r</i> , the variable which should be treated as "normal" is while $\frac{d?}{d}$ should be added
	when
2.	(a) The domain of $f(x) = ln x$ is To find the domain of the natural log of a quantity,
	you must
	(b) To find the derivative of a <i>log<sub>b</sub> x</i> function, you must first
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3.	Write a set of steps for finding the derivative of a variable raised to a variable power.

4.	a) Expressions such as $\frac{0}{2}$ or $\frac{\infty}{2}$ are considered to be	because

b) Why are expressions such as  $0 \cdot \infty$  or  $1^{\infty}$  considered indeterminate?

c) L'Hopital's Rule can only be used when the indeterminate forms \_\_\_\_\_ or \_\_\_\_ are present.

- d) If L'Hopital's Rule is applied to a function and the new function also results in an indeterminate form, you should \_\_\_\_\_\_.
- e) The limit of a function that results in  $0 \cdot \infty$  or  $\infty \infty$  is found by
- f) The limit of a function which results in an expression such as  $0^0$ ,  $\infty^0$ , or  $1^\infty$  must be found by

5. Important Rules, Formulas, Etc.

a) Change of base formula for logarithms

b) 
$$\frac{d}{dx}a^x$$

c) 
$$\frac{d}{dx}e^x$$

d) 
$$\frac{d}{dx} \ln x$$

e) Derivatives of the 6 inverse trig functions

f)  $\lim_{x \to +\infty} e^x = \underline{\qquad} \qquad \lim_{x \to -\infty} e^x = \underline{\qquad} \qquad \lim_{x \to +\infty} \ln x = \underline{\qquad} \qquad \lim_{x \to 0^+} \ln x = \underline{\qquad}$