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## CALCULUS JOURNAL DERIVATIVES OF SPECIAL FUNCTIONS

1. a) Implicit differentiation must be used when $\qquad$
$\qquad$ or when $\qquad$ .
b) If you are finding $\frac{d p}{d b}$ using implicit differentiation in a relation which contains the variables $b, c$, $p$, and $r$, the variable which should be treated as "normal" is ___ while $\frac{d ?}{d_{-}}$should be added when $\qquad$ .
2. (a) The domain of $f(x)=\ln x$ is $\qquad$ . To find the domain of the natural log of a quantity, you must $\qquad$ .
(b) To find the derivative of a $\log _{b} x$ function, you must first $\qquad$
3. Write a set of steps for finding the derivative of a variable raised to a variable power.
4. a) Expressions such as $\frac{0}{0}$ or $\frac{\infty}{\infty}$ are considered to be $\qquad$ because
b) Why are expressions such as $0 \cdot \infty$ or $1^{\infty}$ considered indeterminate? $\qquad$ . .
c) L'Hopital's Rule can only be used when the indeterminate forms $\qquad$ or $\qquad$ 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 $\qquad$ .
e) The limit of a function that results in $0 \cdot \infty$ or $\infty-\infty$ is found by $\qquad$
$\qquad$ .
f) The limit of a function which results in an expression such as $0^{0}, \infty^{0}$, or $1^{\infty}$ must be found by
$\qquad$ .
5. Important Rules, Formulas, Etc.
a) Change of base formula for logarithms
b) $\frac{d}{d x} a^{x}$
c) $\frac{d}{d x} e^{x}$
d) $\frac{d}{d x} \ln x$
e) Derivatives of the 6 inverse trig functions
f) $\lim _{x \rightarrow+\infty} e^{x}=$ $\qquad$ $\lim _{x \rightarrow-\infty} e^{x}=$ $\qquad$ $\lim _{x \rightarrow+\infty} \ln x=$ $\qquad$ $\lim _{x \rightarrow 0^{+}} \ln x=$ $\qquad$
