$a^u = a^u \ln a \cdot u'$ $\quad \log_a u = \frac{1}{u \ln a} \cdot u'$

Review - Newton's, Differentials & Transcendentals

D 1. $f(x) = \ln(\ln(1-x))$

$f'(x) = \frac{1}{\ln(1-x)} \cdot \frac{1}{1-x} \cdot -1$

$= \frac{-1}{(1-x)\ln(1-x)}$

D 2. $f(x) = \ln(\cos(3x))$

$f'(x) = \frac{1}{\cos(3x)} \cdot -\sin(3x) \cdot 3$

$= -3\tan(3x)$

A 3. $f(x) = e^{3x} + 1$

$f'(x) = e^{3x} \cdot 3$

$2 = 3e^{3x}$

$\frac{2}{3} = e^{3x}$

$\ln\frac{2}{3} = 3x$

$-.366 = x$

D 4. $f'(x) = \ln x - x + 2$

$0 = \ln x - x + 2$

$.159, 3.146 = x$