Problems for Gateway #4: Derivatives of Functions Involving Logarithms

1. Find the derivative of: $f(x) = \frac{2}{x} + 2 \cdot \ln(x)$,
2. Find the derivative of: $g(x) = 12 \cdot \ln(x)$.
3. Find the derivative of: $k(x) = 8 \cdot \ln(x^{1/2}) - 12$.
4. Find the derivative of: $m(x) = 4 \cdot \ln(x) + 2 \cdot x$.
5. Find the derivative of: $p(x) = \ln(x^{-1})$.
6. Find the derivative of: $q(x) = \ln(9 \cdot x) + 19 \cdot \ln(x^6)$.
7. Find the derivative of: $u(z) = -\ln(z^{1/2})$.
8. Find the derivative of: $v(t) = 19 \cdot \ln(t^2)$.
9. Find the derivative of: $t(y) = 9 \cdot y^8 + 8 \cdot y^9 - \ln(y)$.
10. Find the derivative of: $n(t) = \ln(100)$.

ANSWERS:

1. $f'(x) = -2/x^2 + 2/x$.
2. $g'(x) = 12/x$.
3. $k'(x) = 4/x$.
4. $m'(x) = 4/x + 2$.
5. $p'(x) = -1/x$.
6. $q'(x) = 1/x + 114/x$.
7. $u'(z) = -1/(2z)$
8. $v'(t) = 38/t$.
9. $t'(y) = 72y^7 + 72y^8 - 1/y$.
10. $n'(t) = 0$.