

# CALCULUS

## Derivatives of logarithmic functions

### OLD2

0390-1. Differentiate  $f(x) = \ln(|2x^3 + x - 5|)$ .  
OLD2

0390-2. Differentiate  $y = \log_2(|2x^3 + x - 5|)$ .  
OLD2

0390-3. Differentiate  $g(x) = 1 + [\cot(\ln x)]$ .  
OLD2

0390-4. Differentiate  $h(x) = e^{2(\ln x)}$ .  
OLD2

0390-5. Differentiate  $\alpha(x) = \ln(3\pi^2 + 4\pi + 8)$ .  
OLD2

0390-6. Differentiate  $Q(r) = \sqrt[4]{\ln r}$ .  
OLD2

0390-7. Differentiate  
OLD2

$$z = \ln \left( \left| \frac{(x^2 + 4)^5 (x - 3)^2}{(2x - 6)^7 (5x^3 - 2)^9 (e^{2x})} \right| \right).$$

0390-8. Differentiate  
OLD2

$$F(t) = \ln \left( \left| 2t^5 e^{-4t} + 3t^2 e^{-4t} - 5t e^{-4t} + 6e^{-4t} \right| \right).$$

0390-9. Differentiate  $u = 2t^5 \log_3 \left( \sqrt[5]{t} \right)$ .  
OLD2

0390-10. Let  $f(x) = [x^2] [\ln(3x^2 - 1)]$ .  
OLD2

Find  $f'(x)$  and  $f''(x)$ .