

8. Find the derivative of
 $f(x) = \ln 4 \cdot y^{\ln 2}$

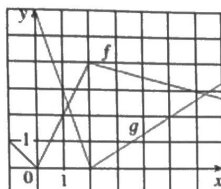
$f'(x) = \ln 4 \cdot y^{\ln 2 - 1} \cdot y^{\ln 2}$
 $f'(x) = \ln 4 \cdot y^{\ln 2}$
chain rule dy/du notation

Math2413

Ch3 Derivatives

Name: _____

Given the graph below:



13. Find $u'(1)$ where
 $u(x) = f(g(x))$

14. Find $v'(1)$ where $v(x) = g(f(x))$

15. Find $w'(5)$ where
 $w(x) = f(x)g(x)$

16. Find $z'(5)$ where $z(x) = \frac{f(x)}{g(x)}$

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Exit Ticket Upload: Find the derivative for each of the following. Show all work!!!

#1 $f(x) = x^2 e^{-5x}$

$u = x^2$
 $u' = 2x$

$v = e^{-5x}$
 $v' = (\ln e) e^{-5x} \cdot -5$

$u'v + uv'$
 $\frac{d}{dx}(a^u) = (\ln a) a^u (u')$

$f'(x) = 2x(e^{-5x}) + x^2(\ln e)e^{-5x} \cdot -5$
 $f'(x) = e^{-5x}(2x - 5x^2(\ln e))$

#2 $f(x) = \frac{(x^2-1)^3}{(2x+1)^5}$

$u'v + uv'$ $u = (x^2-1)^3$

$f(x) = (x^2-1)^3 \cdot (2x+1)^{-5}$

$u' = 3(x^2-1)^2 \cdot 2x$
derivative

$f'(x) = 3(x^2-1)^2 \cdot 2x(2x+1)^{-5} + (x^2-1)^3 \cdot (-5)(2x+1)^{-6} \cdot 2$

$v = (2x+1)^{-5}$

$v' = -5(2x+1)^{-6} \cdot 2$

$f'(x) = 6x(x^2-1)^2(2x+1)^{-5} - 10(x^2-1)^3(2x+1)^{-6}$

$f'(x) = \frac{6x(x^2-1)^2}{(2x+1)^5} - \frac{10(x^2-1)^3}{(2x+1)^6}$