



BitWith Bite

MATHEMATICS WORKSHEET



Rules of Differentiation

Chapter: Differential Calculus · Level ★★★ ·
Time: 30 min

SCORE

___ / 20

Name _____ Class _____ Date _____

AFTER THIS WORKSHEET YOU CAN

- ✓ Apply the power, constant, and sum/difference rules.
- ✓ Differentiate products using the product rule.
- ✓ Differentiate quotients using the quotient rule.
- ✓ Recall the derivatives of e^x , $\ln x$, $\sin x$ and $\cos x$.



Section A · Concept Check

BEGINNER

$4 \times 1 = 4$

- $d/dx[7x^4 - 3x^2 + 5] = ?$
☐ A. $28x^3 - 6x$ ☐ B. $28x^3 - 6x + 5$
☐ C. $7x^3 - 3x$ ☐ D. $28x^4 - 6x^2$
- The product rule $d/dx[uv]$ equals:
☐ A. $u'v'$ ☐ B. $u'v + uv'$ ☐ C. $u'v - uv'$ ☐ D. uv'
- $d/dx[10] = ?$
☐ A. 10 ☐ B. 1 ☐ C. 0 ☐ D. x
- The quotient rule $d/dx[u/v]$ equals:
☐ A. $(u'v - uv')/v^2$ ☐ B. $(u'v + uv')/v^2$ ☐ C. u'/v'
☐ D. $(uv' - u'v)/v^2$



Section B · Problem Solving

INTERMEDIATE

$2 + 3 \times 3 = 11$

- $d/dx[x^n] =$ _____
- $d/dx[e^x] =$ _____
- Differentiate $f(x) = 7x^4 - 3x^2 + 5$.

- Differentiate $f(x) = 10$.

- Differentiate $f(x) = x^3 \cdot e^x$ (product rule).



Section C · Challenge

CHALLENGE

5

- Differentiate $f(x) = \sin(x)/x$ (quotient rule).

Reflection — the most useful thing I learned: _____

A ___/4 B ___/11 C ___/5 Total ___/20

Teacher's Signature

Parent's Signature

ANSWER KEY — FOLD OR CUT BEFORE HANDING OUT

1-A 2-B 3-C 4-A | 5 $n \cdot x^{n-1}$ 6 e^x 7 $= 28x^3 - 6x$ 8 = 0 9 $= 3x^2e^x + x^3e^x$ | 10 =
 $(x \cdot \cos x - \sin x)/x^2$

