Calculus (ME 1C) NAME ______________________

第二次小考 Dec 13, 1996 學號 ______________________

求以下函數的導函數 (**1–12** 每題五分, **13–16** 每題十分)

1. $y = -3x^4 - 4x^3 - 6x + 2$

2. $f(x) = x^2 \cos x$

3. $w = (t^3 + 5t)(t^2 - 7t + 2)$

4. $w = (\sqrt{t} + 1)^{100}$

5. $x^2 + y^2 = \sqrt{7}$, find $\dfrac{dy}{dx}$

6. $\sin(xy) = 2x + 5$, find $\dfrac{dy}{dx}$

7. $f(y) = \sin^{-1}(y^2) = \arcsin(y^2)$

8. $z = \dfrac{t^2 + 5t + 2}{t + 3}$

9. $f(x) = \ln(e^x + 1)$

10. $f(x) = e^2 + x^e$

11. $y = x \cdot 2^x$

12. $f(x) = 6e^{5x} + e^{-x^2}$

13. $y^2 = \dfrac{x^2}{xy - 4}$, find $\dfrac{dy}{dx}$ at $(4, 2)$

14. $x \ln y + y^3 = \ln x$, find $\dfrac{dy}{dx}$

15. $r(\theta) = \sin[(3\theta - \pi)^2]$

16. $s(\theta) = \sin^2(3\theta - \pi)$

$\mu = 86.5$, $\sigma = 18.6$.

$$\{25, 35, 45, 55, 60, 60, 60, 65, 65\} \leq \mu - \sigma.$$