Name:

AP Physics C
M. Lam

Chain Rule

Block:

Differentiate each function with respect to t.

1. $f(t) = \left(t^3 + 3\right)^5$

2. $x(t) = \left(-5t^3 - 3\right)^3$

3. $v(t) = \sqrt{t^3 + 2t - 4}$

4. $a(t) = \left(-t^4 + 4t^2 - 5\right)^{-2}$

5. $r(t) = \dfrac{1}{\sqrt[3]{3t^2 - t - 4}}$

6. $s(t) = \sin 2t^3$

7. $u(t) = \cos(4t + 1)$

8. $v(t) = \sin^2 t$

9. $f(t) = \ln t^3$

10. $g(t) = 4e^{7t^3}$

11. $h(t) = 2\sin(\cos t)$

12. $f(t) = e^{e^t}$

13. $f(t) = \cos\left(\ln 4t^3\right)$

14. $r(t) = e^{\left(5t^3 + 5\right)^2}$

15. $f(t) = \sin\left(-3t^2 + 2\right)^2$

16. $p(t) = (t + 1)\ln t^2$

17. $q(t) = 3\cos 3t^2\left(1 + e^t\right)$

18. $f(t) = \cos^2\left(8t^4 - 5t^2 + 1\right)$

19. $g(t) = \ln\left(-\dfrac{4t^4}{t^3 - 3}\right)^5$

20. $f(t) = \dfrac{e^{5t^4}}{e^{4t^2+3}}$