

No calculators will be allowed and no partial credit will be given.

1. Differentiate the function $f(x) = -x^5 + 17x - 5$. Express your answer in terms of elementary functions.
2. Let $y = e^t + t^5 - 2t^{\frac{4}{3}}$. Find $\frac{dy}{dt}$. Express your answer in terms of elementary functions.
3. Let $y = \sec(t) + 2t^8$. Find $\frac{dy}{dt}$. Express your answer in terms of elementary functions.
4. Differentiate the function $g(x) = 2 \sec(x) + e^x - 5x^3$. Express your answer in terms of elementary functions.
5. Differentiate the function $f(x) = \pi^3 x + \ln(4)$. Express your answer in terms of elementary functions.
6. Differentiate the function $f(x) = (4x^3 + 5x^2 + 3)(5x^5 + 7x + 2)$. Express your answer in terms of elementary functions.
7. Let $y = \left(3t^{\frac{4}{3}} + 3\right) e^t$. Find $\frac{dy}{dt}$. Express your answer in terms of elementary functions.
8. Differentiate the function $f(x) = -5e^x \cos(x)$. Express your answer in terms of elementary functions.
9. Differentiate the function $f(t) = -2t^6 \ln(t)$. Express your answer in terms of elementary functions.
10. Differentiate the function $h(x) = \frac{e^x}{e^x - 3x^3 + 3}$. Express your answer in terms of elementary functions.
11. Differentiate the function $f(x) = \frac{7e^x}{\cos(x)}$. Express your answer in terms of elementary functions.
12. Differentiate the function $f(x) = \frac{8 \sec(x)}{x^3}$. Express your answer in terms of elementary functions.
13. Let $y = \frac{3t^5}{\cos(t)}$. Find $\frac{dy}{dt}$. Express your answer in terms of elementary functions.

1. $17 - 5x^4$
2. $e^t + 5t^4 - \frac{8t^{\frac{1}{3}}}{3}$
3. $\sec(t) \tan(t) + 16t^7$
4. $2 \sec(x) \tan(x) + e^x - 15x^2$
5. π^3
6. $(12x^2 + 10x)(5x^5 + 7x + 2) + (4x^3 + 5x^2 + 3)(25x^4 + 7)$
7. $(3t^{\frac{4}{3}} + 3)e^t + 4t^{\frac{1}{3}}e^t$
8. $5e^x \sin(x) - 5e^x \cos(x)$
9. $-12t^5 \ln(t) - 2t^5$
10. $\frac{e^x}{e^x - 3x^3 + 3} - \frac{e^x(e^x - 9x^2)}{(e^x - 3x^3 + 3)^2}$
11. $\frac{7e^x \sin(x)}{(\cos(x))^2} + \frac{7e^x}{\cos(x)}$
12. $\frac{8 \sec(x) \tan(x)}{x^3} - \frac{24 \sec(x)}{x^4}$
13. $\frac{3t^5 \sin(t)}{(\cos(t))^2} + \frac{15t^4}{\cos(t)}$