

# Derivative Practice Problems

1.  $2x - \frac{2}{x^3}$

2.  $12288x^2$

3.  $\frac{t+1}{2t^{3/2}}$

4.  $-\frac{54}{t^{10}}$

5.  $4x^3 + 3x^2 + 6x + 2$

6.  $-2e^{-x}$

7.  $\frac{23}{(2-3t)^2}$

8.  $2\sin x \cos x$

9.  $-6x \sin(3x^2 + 5)$

10.  $-\frac{1}{(x-1)^2}$

11.  $\frac{3x^4 - 5}{2x^{7/2}}$

12.  $3e^x(x^3 + 3x^2 + 2x + 2)$

13.  $-\frac{\sec^2(\sqrt{1-x})}{2\sqrt{1-x}}$

14.  $\frac{2}{4x^2 + 1}$

15.  $\frac{2x}{x^2 + 2}$

16.  $3^x \ln 3$

17.  $\sin x (-\cos(\cos x))$

18.  $2x \tan(x^2) \sec(x^2)$

19.  $\frac{10e^{2x}(3x^4 - 6x^3 + 7)}{(3x^4 + 7)^2}$

20.  $-\frac{2}{x(\ln x)^3}$

21.  $\frac{4}{\sqrt{1-16x^2}}$

# Integration Practice Problems

1.  $7x$

2.  $\frac{7t^2}{2}$

3.  $\frac{x^5}{5}$

4.  $\frac{x^4}{4} + \frac{x^2}{2}$

5.  $\sin t$

6.  $\frac{2}{3}x^{3/2}$

7.  $\ln t$

8.  $-\frac{1}{x}$

9.  $\frac{t^2}{2} + \ln t$

10.  $3e^x - 2\cos x + c$

11.  $7e^x + c$

12.  $2t + \sin t + c$

13.  $2t^2 + 4\ln t + c$

14.  $x + \ln x + c$

15.  $\frac{2x\sqrt{x^3}}{5} - 2\ln x + c$

16.  $3\sin x + 7\cos x + c$

17.  $2\ln x - \pi\cos x + c$

18.  $\frac{x^2}{2} + x + \ln x + c$

19.  $36$

20.  $\frac{1}{\sqrt{2}}$

21.  $4(e^e - 1)$

22.  $1 - \cos(1)$

23.  $\ln(3)$

24.  $\frac{16}{3}$

25.  $-\frac{8}{9}$

26.  $9$

27.  $\frac{1}{4}$