

# Indefinite Integrals II - Answer Key

Compute the following indefinite integrals.

$$1. \int \frac{x(6x+28)}{x^3+7x^2+5} dx$$
$$2 \ln |x^3 + 7x^2 + 5| + C$$

$$6. \int x^3 \sqrt{1+x^2} dx$$
$$\frac{(\sqrt{1+x^2})^5}{5} - \frac{(\sqrt{1+x^2})^3}{3} + C$$

$$2. \int \frac{\tan^2\left(\frac{1}{x}\right)}{x^2} dx$$
$$\frac{1}{x} - \tan\left(\frac{1}{x}\right) + C$$

$$7. \int x^2 \sin(x) dx$$
$$2x \sin x + (2-x^2) \cos x + C$$

$$3. \int x \ln(x^2) dx$$
$$x^2 \ln(x) - \frac{x^2}{2} + C$$

$$8. \int x \tan^{-1} x dx$$
$$\frac{1}{2}(x^2 \tan^{-1} x + \tan^{-1} x - x) + C$$

$$4. \int x^3 \cos(x^2) dx$$
$$\frac{1}{2}(x^2 \sin(x^2) + \cos(x^2)) + C$$

$$9. \int \frac{dx}{x^2 - 4x + 8}$$
$$\frac{1}{2} \tan^{-1}\left(\frac{x-2}{2}\right) + C$$

$$5. \int \sqrt{x} e^{\sqrt{x}} \frac{\cos(\sqrt{x})}{x} dx$$
$$e^{\sqrt{x}} (\cos(\sqrt{x}) + \sin(\sqrt{x})) + C$$

$$10. \int x (\ln(\sqrt{x})^2) dx$$
$$\frac{(x \ln x)^2}{8} - \frac{x^2 \ln x}{8} + \frac{x^2}{16} + C$$

---

©2012 Shmoop University, Inc. All rights reserved. For classroom use only. Want to print this out for your classroom? Go for it. All other reproduction and distribution is prohibited.