Indefinite Integrals II - Answer Key

Compute the following indefinite integrals.

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

   $2\ln|x^3+7x^2+5|+C$

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

   $\frac{1}{x}-\tan\left(\frac{1}{x}\right)+C$

3. $\int x\ln(x^2)dx$

   $x^2\ln(x)-\frac{x^2}{2}+C$

4. $\int x^3\cos(x^2)dx$

   $\frac{1}{2}\left(x^2\sin(x^2)+\cos(x^2)\right)+C$

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

   $e^{\sqrt{x}}(\cos(\sqrt{x})+\sin(\sqrt{x}))+C$

6. $\int x^3\sqrt{1+x^2}dx$

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

7. $\int x^2\sin(x)dx$

   $2x\sin x+(2-x^2)\cos x+C$

8. $\int x\tan^{-1}xdx$

   $\frac{1}{2}(x^2\tan^{-1}x+\tan^{-1}x-x)+C$

9. $\int \frac{dx}{x^2-4x+8}$

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

10. $\int x(\ln(\sqrt{x})^2dx$

    $\frac{(x\ln x)^2}{8}-\frac{x^2\ln x}{8}+\frac{x^2}{16}+C$
