Inverse Trigonometric Functions - Integration

<u>Integration</u>

$$\int \frac{1}{\sqrt{a^2 - u^2}}\, du = \arcsin\frac{u}{a} + C$$

$$\int \frac{1}{a^2 + u^2}\, du = \frac{1}{a}\arctan\frac{u}{a} + C$$

$$\int \frac{1}{u\sqrt{u^2 - a^2}}\, du = \frac{1}{a}\operatorname{arc\,sec}\frac{|u|}{a} + C$$

Directions: Evaluate the integral.

1. $\int \dfrac{8}{16 + x^2}\, dx$

2. $\int \dfrac{1}{x\sqrt{9x^2 - 1}}\, dx$

3. $\int \dfrac{e^{2x}}{4+e^{4x}}\,dx$

4. $\int \dfrac{1}{\sqrt{x}\sqrt{1-x}}\,dx$

5. $\displaystyle\int \frac{x}{\sqrt{49-(x-7)^2}}\,dx$

6. $\displaystyle\int_{0}^{\frac{1}{2}} \frac{\arcsin x}{\sqrt{1-x^2}}\,dx$

7. $\displaystyle\int_0^{\frac{\pi}{2}} \frac{\sin x}{1+\cos^2 x}\,dx$

8. $\displaystyle\int \frac{1}{x^2-4x+8}\,dx$

9. $\displaystyle\int \frac{2x}{x^2 + 10x + 41}\,dx$

10. $\displaystyle\int \frac{3x - 1}{\sqrt{4x - x^2}}\,dx$

11. $\int \dfrac{x}{\left(x^2+1\right)^2+1}\,dx$

12. $\int \dfrac{x+9}{x^2+9}\,dx$

13. $\int \dfrac{x}{\sqrt{1-x^4}}\,dx$

14. $\int \dfrac{x}{x^4+6x^2+10}\,dx$