INVERSE TRIGONOMETRIC FUNCTIONS QUIZ

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Name: $\underline{Solutions}$

1. Compute $\dfrac{\mathrm{d}}{\mathrm{d}x}\arctan(x)$

$$\frac{d}{dx}\arctan(x) = \frac{1}{1+x^2}$$

2. Compute $\displaystyle\int \frac{e^{2x}}{1+e^{4x}}\,\mathrm{d}x$

$$u = e^{2x}$$
$$du = 2e^{2x}\,dx$$

$$\int \frac{e^{2x}}{1+e^{4x}}\,dx = \int \frac{1}{1+u^2}\,\frac{1}{2}du$$
$$= \frac{1}{2}\arctan(u)+C$$
$$= \boxed{\frac{1}{2}\arctan\left(e^{2x}\right)+C}$$