Practice Problems — 02/25/05

(1) Compute $\dfrac{d}{dx}\left[\arctan(\arcsin(x))\right]$.

(2) Compute $\dfrac{d}{dx}\left[(1+x^2)\arctan(x)\right]$.

(3) Compute $\dfrac{d}{dx}\left[\arctan(x-\sqrt{1+x^2}\,)\right]$.

(4) Find $\dfrac{dy}{dx}$ for the graph $\sqrt{1 + x^2 y^2} = 2xy$.

(5) Find $\dfrac{dy}{dx}$ for the graph $e^y = x$ (notice this gives an alternate way to compute $\dfrac{d}{dx}[\log(x)]$).

(6) Find $\dfrac{dy}{dx}$ for the graph $\cos(y) = x$ (notice this gives an alternate way to compute $\dfrac{d}{dx}[\arccos(x)]$).

(7) Find the equation of the line tangent to $y^2 = x^3(2 - x)$ at the point $(1, 1)$.

(8) Show that the sum of the $x-$ and $y-$intercepts of any tangent to $\sqrt{x} + \sqrt{y} = \sqrt{c}$ is c.