Problem 1. Differentiate the given functions.

1. $y = \arccos(\sqrt{1-x})$.
2. $z = \arctan\sqrt{w}$.
3. $\theta = \sqrt{\arccos t}$.
4. $y = \dfrac{\arctan x}{x^2}$.
5. $y = \dfrac{x}{\arcsin x^2}$.

Problem 2. Differentiate the given functions.

1. $y = e^{\sqrt{x}}$.
2. $y = e^{2\cos x}$.
3. $y = x^2\, e^{\tan x}$.
4. $y = \arcsin(e^{2x})$.
5. $y = \dfrac{e^x}{x^3}$.

Answers on next page

Answers to problem 1.

1. $\dfrac{dy}{dx} = \dfrac{1}{2\sqrt{x(1-x)}}$.
2. $\dfrac{dz}{dw} = \dfrac{1}{2\sqrt{w}(1+w)}$.
3. $\dfrac{d\theta}{dt} = \dfrac{-1}{2\sqrt{(\arccos t)\,(1-t^2)}}$.
4. $\dfrac{dy}{dx} = \dfrac{x^2 - 2x(1+x^2)\arctan x}{x^4(1+x^2)}$.
5. $\dfrac{dy}{dx} = \dfrac{\arcsin x^2\,\sqrt{1-x^4} - 2x^2}{(\arcsin x^2)^2\,(\sqrt{1-x^4})}$.

Answer to Problem 2.

1. $\dfrac{dy}{dx} = \dfrac{e^{\sqrt{x}}}{2\sqrt{x}}$.
2. $\dfrac{dy}{dx} = -2\sin x\,(e^{2\cos x})$.
3. $\dfrac{dy}{dx} = (2x + x^2\sec^2 x)(e^{\tan x})$.
4. $\dfrac{dy}{dx} = \dfrac{2\,e^{2x}}{\sqrt{1-e^{4x}}}$.
5. $\dfrac{dy}{dx} = \dfrac{e^x(x-3)}{x^4}$.