'Deep Sea Bubbles'

$$\frac{d}{dx}\left(\sin\frac{y^3}{100}\right)=\frac{3y^2}{100}\frac{dy}{dx}\cos\frac{y^3}{100}$$
$$\frac{d}{dx}(e^{-x}y)=e^{-x}\frac{dy}{dx}-e^{-x}y$$
$$\frac{d}{dx}(x^2)=2x,\frac{d}{dx}(5)=0$$
thus, if $\sin\frac{y^3}{100}+e^{-x}y+x^2=5,\frac{3y^2}{100}\frac{dy}{dx}\cos\frac{y^3}{100}+e^{-x}\frac{dy}{dx}-e^{-x}y+2x=0$
$$\frac{dy}{dx}\left(\frac{3y^2}{100}\cos\frac{y^3}{100}+e^{-x}\right)=e^{-x}y-2x$$
$$\frac{dy}{dx}=\frac{100(e^{-x}y-2x)}{3y^2\cos\frac{y^3}{100}+100e^{-x}}$$
$$\frac{dy}{dx}=\frac{100(y-2e^{x}x)}{3e^{x}y^2\cos\frac{y^3}{100}+100}$$
$$0=\frac{100(y-2e^{x}x)}{3e^{x}y^2\cos\frac{y^3}{100}+100},0=y-2e^{x}x$$
$$y=2xe^{x}$$