Skill Builder: Topic 3.2 – Implicit Differentiation (Circuit)

Begin in the first cell marked #1 and find the derivative of each given function. To advance in the circuit, search for your answer and mark that cell #2. Continue in this manner until you complete the circuit. Show all pertinent work.

# 1 **Ans:** $-\frac{25}{4}$ Find $\frac{dy}{dx}$ for $3\sqrt[3]{x}-12\sqrt[3]{y^4}=9.$	# ___ **Ans:** 1 Find the slope of the tangent line to the graph of $2xy^2+xy=y$ when $y=1.$
# ___ **Ans:** $-\frac{9}{2}$ Find $\frac{dy}{dx}$ for $y^2=\frac{1}{2x+5}.$	# ___ **Ans:** $\frac{1-y\sec^2(xy)}{x\sec^2(xy)-1}$ For the relation $\sqrt{x+y}=3x$, find the value of x for which $\frac{dy}{dx}=17$ when $y=8.$
# ___ **Ans:** $\frac{1}{16\sqrt[3]{x^2y}}$ If $\sin y+x=\frac{7}{2}$, find the rate of change at the point $\left(3,\frac{\pi}{6}\right).$	# ___ **Ans:** undefined Write the y-intercept of the equation of the tangent line to $x^2+y^2=25$ in the third quadrant where $x=-3.$
# ___ **Ans:** $\frac{-1}{y(2x+5)^2}$ Find the slope of the tangent line to the ellipse $x^2+4y^2=16$ at the point $(4,0).$	# ___ **Ans:** $-\frac{2}{\sqrt{3}}$ Find $\frac{dy}{dx}$ for $\tan(xy)=x+y.$