1.(1 pt) If $4x^2+5x+xy=5$ and $y(5)=-24$, find $y'(5)$ by implicit differentiation.

2.(1 pt) If $\sqrt{x}+\sqrt{y}=11$ and $y(4)=81$, find $y'(4)$ by implicit differentiation.

3.(1 pt) If $\frac{x^2}{49}+\frac{y^2}{25}=1$ and $y(3)=4.51754$, find $y'(3)$ by implicit differentiation.

4.(1 pt) Find the slope of the tangent line to the curve

$$2x^2+0xy+4y^3=306$$

at the point $(-5,4)$.

5.(1 pt) Use implicit differentiation to find the slope of the tangent line to the curve

$$-1x^2+3xy-4y^3=243$$

at the point $(1,-4)$.

$m=$ _____

6.(1 pt) Find the slope of the tangent line to the curve $xy^3+2y+0.199=0$ at the point $(-0.7,-0.1)$.

7.(1 pt) Use implicit differentiation to find the slope of the tangent line to the curve

$$xy^3+xy=10$$

at the point $(5,1)$.

$m=$ _____

8.(1 pt) Use implicit differentiation to find the equation of the tangent line to the curve $xy^3+xy=8$ at the point $(4,1)$. The equation of this tangent line can be written in the form $y=mx+b$ where m is: _____
and where b is: _____

9.(1 pt) Find the slope of the tangent line to the curve

$$\sqrt{4x+1y}+\sqrt{2xy}=9.26$$

at the point $(4,3)$.

10.(1 pt) Find the slope of the tangent line to the curve (a lemniscate)

$$2(x^2+y^2)^2=25(x^2-y^2)$$

at the point $(-3,-1)$.

$m=$ _____

11.(1 pt) Find the equation of the tangent line to the curve (a lemniscate) $2(x^2+y^2)^2=25(x^2-y^2)$ at the point $(3,-1)$. The equation of this tangent line can be written in the form $y=mx+b$ where m is: _____
and where b is: _____

12.(1 pt) Use implicit differentiation to find the slope of the tangent line to the curve

$$\frac{y}{x+7y}=x^4-3$$

at the point $(1,\frac{-2}{15})$.

$m=$ _____

13.(1 pt) Find y' by implicit differentiation. Match the expressions defining y implicitly with the letters labeling the expressions for y'.

__ 1. $5\sin(x-y)=4y\sin x$
__ 2. $5\sin(x-y)=4y\cos x$
__ 3. $5\cos(x-y)=4y\cos x$
__ 4. $5\cos(x-y)=4y\sin x$

A. $\frac{5\cos(x-y)+4y\sin x}{5\cos(x-y)+4\cos x}$
B. $\frac{-5\sin(x-y)+4y\sin x}{4\cos x-5\sin(x-y)}$
C. $\frac{-5\sin(x-y)-4y\cos x}{4\sin x-5\sin(x-y)}$
D. $\frac{5\cos(x-y)-4y\cos x}{5\cos(x-y)+4\sin x}$

14.(1 pt) Find y' by implicit differentiation. Match the expressions defining y implicitly with the letters labeling the expressions for y'.

__ 1. $3x\sin y+3\sin 2y=5\cos y$
__ 2. $3x\cos y+3\sin 2y=5\sin y$
__ 3. $3x\cos y+3\cos 2y=5\sin y$
__ 4. $3x\sin y+3\cos 2y=5\cos y$

A. $\frac{3\cos y}{3x\sin y-6\cos 2y+5\cos y}$
B. $\frac{3\sin y}{6\sin 2y-3x\cos y-5\sin y}$
C. $\frac{3\cos y}{3x\sin y+6\sin 2y+5\cos y}$
D. $-\frac{3\sin y}{3x\cos y+6\cos 2y+5\sin y}$