

1. Answer each of the following questions, showing all working:

(1) Solve

$$\begin{aligned} -5y &= -110 + 9x \\ 0 &= -9y - 63 + 36x \end{aligned}$$

(2) Solve

$$\begin{aligned} -3y - 9 \cos x &= -9 \\ 7y - 8 \cos x &= -8 \end{aligned}$$

$$\text{given } 0 \leq x < 2\pi$$

(3) Do the lines $-7y = -113 + 3x$ and $-8 - 2x = -12y$ intersect? If so, find the point of intersection.

2. Answer each of the following questions, showing all working:

(1) Solve

$$\begin{aligned} -7y &= -49x - 14 \\ 93 &= 10y + 3x \end{aligned}$$

(2) Solve

$$\begin{aligned} -4x - 3\sqrt{y} &= -24 \\ -13x + 9\sqrt{y} &= -3 \end{aligned}$$

(3) Do the lines $2y - 2 = -8x$ and $0 = -9y + 18 - 36x$ intersect? If so, find the point of intersection.

3. Answer each of the following questions, showing all working:

(1) Solve

$$\begin{aligned} 10y - 488 &= 9x \\ -2y &= -14x \end{aligned}$$

(2) Solve

$$\begin{aligned} -8y + 3 \tan x &= 75 \\ -3y + 4 \tan x &= 31 \end{aligned}$$

$$\text{given } 0 \leq x < 2\pi$$

(3) Do the lines $-10y = 10x + 90$ and $4y + 4x + 36 = 0$ intersect? If so, find the point of intersection.

4. Answer each of the following questions, showing all working:

(1) Solve

$$\begin{aligned} 4x + 2y &= 2 \\ 11x - 9y &= -67 \end{aligned}$$

(2) Solve

$$\begin{aligned}8x + 8 \ln y &= 0 \\3x - 5 \ln y &= -8\end{aligned}$$

(3) Do the lines $3x + 4y = 54$ and $-13x + 7y = -88$ intersect? If so, find the point of intersection.

5. Answer each of the following questions, showing all working:

(1) Solve

$$\begin{aligned}-3x - 2y &= -14 \\30x + 20y &= 154\end{aligned}$$

(2) Solve

$$\begin{aligned}2 \ln y - 4x &= 16 \\10 \ln y + 9x &= -36\end{aligned}$$

(3) Do the lines $0 = -63 - 9x + 81y$ and $31 - 45y = -5x$ intersect? If so, find the point of intersection.