

Worksheet 15L

Find the equation of the line: (No graphs required)

- ① parallel to $y = \frac{3}{4}x - 5$ through the midpoint of $(-3, 5)$ and $(9, 15)$

$$y = mx + b$$

$$y = \frac{3}{4}x + b$$

$$M = \left(\frac{-3+9}{2}, \frac{5+15}{2} \right)$$

$$= (3, 10)$$

$$10 = \frac{3}{4}(3) + b$$

$$10 = \frac{9}{4} + b$$

$$\cdot 4 \quad -4 \quad \cdot 4$$

$$40 = 9 + 4b$$

$$31 = 4b$$

$$y = \frac{3}{4}x + \frac{31}{4}$$

② perpendicular to $y = -\frac{3}{7}x + \frac{4}{19}$ through the Midpoint
of $(6, 4)$ and $(-8, 2)$

$$M = \left(\frac{6 + (-8)}{2}, \frac{4 + 2}{2} \right)$$

$$M = \left(-\frac{2}{2}, \frac{6}{2} \right)$$

$$M = (-1, 3)$$

$$Y = \frac{7}{3}x + \frac{16}{3}$$

$$m_{\perp} = \frac{7}{3}$$

$$y = mx + b$$

$$y = \frac{7}{3}x + b$$

$$(3) = \frac{7}{3}(-1) + b$$

$$3 = -\frac{7}{3} + b$$

$$\cdot 3 \quad \cdot 3 \quad \cdot 3$$

$$9 = -7 + 3b$$

$$+7 \quad +7$$

$$\frac{16}{3} = \frac{3b}{3}$$

$$\frac{16}{3} = b$$

③ parallel to $-5x - 3y = 7$ through the Midpoint
of $(-8, 4)$ and $(1, 6)$.

$$M = \left(\frac{-8+1}{2}, \frac{4+6}{2} \right)$$

$$M = \left(-\frac{7}{2}, 5 \right)$$

$$-5x - 3y = 7$$

$$-3y = 5x + 7$$

$$y = -\frac{5}{3}x + \frac{7}{3}$$

$$m_{\parallel} = -\frac{5}{3}$$

$$y = mx + b$$

$$y = -\frac{5}{3}x + b$$

$$(5) = -\frac{5}{3} \left(-\frac{7}{2} \right) + b$$

$$5 = \frac{35}{6} + b$$

$$\therefore \quad \cdot b \quad \cdot b$$

$$30 = 35 + 6b$$

$$-5 = 6b$$

$$\frac{-5}{6} = b$$

$$y = -\frac{5}{3}x - \frac{5}{6}$$

④ perpendicular to $8x + 4y = 5$ through the

Midpoint of $(12, 6)$ and $(5, -4)$

$$M = \left(\frac{12+5}{2}, \frac{6+(-4)}{2} \right)$$

$$= \left(\frac{17}{2}, \frac{2}{2} \right)$$

$$= \left(\frac{17}{2}, 1 \right)$$

$$y = \frac{1}{2}x + \frac{-13}{4}$$

$$y = mx + b$$

$$y = \frac{1}{2}x + b$$

$$(1) = \frac{1}{2} \left(\frac{17}{2} \right) + b$$

$$1 = \frac{17}{4} + b$$

$$-4 \quad -4 \quad -4$$

$$4 = 17 + 4b$$

$$-17 \quad -17$$

$$\frac{-13}{4} = \frac{4b}{4}$$

$$8x + 4y = 5$$

$$-8x \quad -8x$$

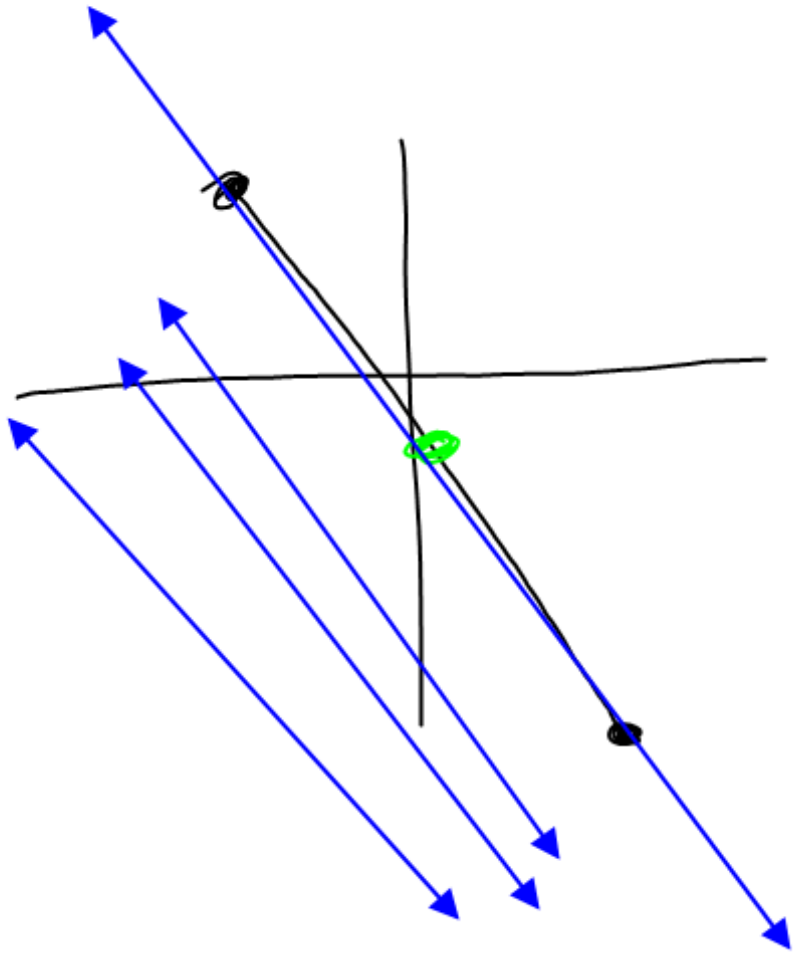
$$\frac{4y}{4} = \frac{-8x}{4} + \frac{5}{4}$$

$$y = \frac{-2}{1}x + \frac{5}{4}$$

old slope

$$m_{\perp} = \frac{1}{2}$$

⑤ parallel to the line containing $(-3, 5)$ and $(5, -11)$
through the midpoint of $(-3, 5)$ and $(5, -11)$



Not
possible