

3.5C - Equations of Perpendicular Bisectors

$$\text{midpoint formula: } \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

Oct 23-9:51 AM

Write the equation of the perpendicular bisector of the segment with the given endpoints.

$$(3, -5) \text{ and } (1, 1)$$

$$\text{midpoint: } \left(\frac{3+1}{2}, \frac{-5+1}{2} \right) \rightarrow (2, -2)$$

$$\text{slope} = \frac{1+5}{1-3} = \frac{6}{-2} = -3 \quad \perp \text{ slope} = \frac{1}{3}$$

$$y = mx + b$$

$$3 \left[-2 = \frac{1}{3}(2) + b \right] \rightarrow \begin{cases} -8 = 3b \\ -\frac{8}{3} = b \end{cases} \quad \boxed{y = \frac{1}{3}x - \frac{8}{3}}$$

$$-6 = 2 + 3b$$

Oct 23-9:53 AM

Write the equation of the perpendicular bisector of the segment with the given endpoints.

$$(-5, 2) \text{ and } (7, 9)$$

$$\text{midpoint: } \left(\frac{-5+7}{2}, \frac{2+9}{2} \right) \rightarrow \left(1, \frac{11}{2} \right)$$

$$\text{slope} = \frac{9-2}{7+5} = \frac{7}{12}$$

$$\perp m = -\frac{12}{7}$$

$$y = -\frac{12}{7}x + \frac{101}{14}$$

$$y = mx + b$$

$$\left[\frac{11}{2} = -\frac{12}{7}(1) + b \right] \quad (14)$$

$$7(11) = -12(2) + b$$

$$77 = -24 + 14b$$

$$+24 \quad +24$$

$$\frac{101}{14} = \frac{14b}{14}$$

$$\frac{101}{14} = b$$

Oct 23-9:53 AM

Homework

pg. 160 # 25-30, 32, 36, 38, 43, 44

Oct 23-9:55 AM