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Algebra /

Writing equations of lines parallel and perpendicular to a given line...

$$y = (-2/7)x + 4$$

$$m = -\frac{2}{7}$$

Parallel passes through (7,5)

Parallel means the same slope as the original.

$$m = -\frac{2}{7} \quad (x, y) = (7, 5)$$

$$y = mx + b$$

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

$$5 = -2 + b$$

$$+2 \quad +2$$

$$7 = b$$

$$y = -\frac{2}{7}x + 7$$

Perpendicular passes through (7, 5)

Perpendicular means the slope is opposite reciprocal or "flip it & switch the sign"

$$m = \frac{7}{2} \quad (x, y) = (7, 5)$$

$$y = mx + b$$

$$5 = \frac{7}{2}\left(\frac{7}{1}\right) + b$$

$$25 = \frac{49}{2} + b$$

$$10 = 49 + 2b$$

$$\dots - 49$$

$$-44 \quad 77$$

$$-\frac{39}{2} = \frac{2b}{2}$$

$$-\frac{39}{2} = b$$

$$y = \frac{7}{2}x - \frac{39}{2}$$

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