

Math 118 - Dr. Miller - Homework #21: Parallel and Perpendicular Slopes

For this entire assignment, let $X = (-2, 1)$, $Y = (2, 5)$, and $Z = (0, -2)$.

1. Find the coordinates of a point A so that $\overleftrightarrow{AX} \parallel \overleftrightarrow{YZ}$ and $AX = YZ$.
2. Find a second possible answer for the task above.
3. Find two possible sets of coordinates of a point B so that $\overleftrightarrow{BY} \parallel \overleftrightarrow{XZ}$ and $BY = XZ$.
4. Find two possible sets of coordinates of a point C so that $\overleftrightarrow{CZ} \parallel \overleftrightarrow{XY}$ and $CZ = XY$.
5. Find two possible sets of coordinates of a point D so that $\overleftrightarrow{DX} \perp \overleftrightarrow{YZ}$ and $DX = YZ$.
6. Find two possible sets of coordinates of a point E so that $\overleftrightarrow{EY} \perp \overleftrightarrow{XZ}$ and $EY = XZ$.
7. Find two possible sets of coordinates of a point F so that $\overleftrightarrow{FZ} \perp \overleftrightarrow{XY}$ and $FZ = XY$.
8. Find two possible sets of coordinates of a point G so that $\overleftrightarrow{GX} \parallel \overleftrightarrow{YZ}$ and $GX = 2YZ$.
9. Find two possible sets of coordinates of a point H so that $\overleftrightarrow{HY} \perp \overleftrightarrow{XZ}$ and $HY = 3XZ$.
10. Find two possible sets of coordinates of a point I so that $\overleftrightarrow{IZ} \parallel \overleftrightarrow{XY}$ and $IZ = \frac{1}{2}XY$.

Answers:

1. $A = (0, 8)$ or $(-4, -6)$
2. *See above.*
3. $B = (4, 2)$ or $(0, 8)$
4. $C = (4, 2)$ or $(-4, -6)$
5. $D = (5, -1)$ or $(-9, 3)$
6. $E = (5, 7)$ or $(-1, 3)$
7. $F = (-4, 2)$ or $(4, -6)$
8. $G = (2, 15)$ or $(-6, -13)$
9. $H = (11, 11)$ or $(-7, -1)$
10. $I = (2, 0)$ or $(-2, -4)$