8.10

1) $\overrightarrow{VA} = 3\overrightarrow{VB}$

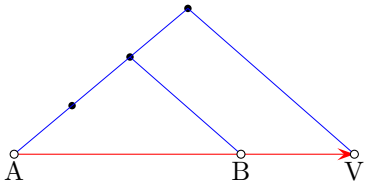
$\overrightarrow{VA} = 3(\overrightarrow{VA} + \overrightarrow{AB})$

$\overrightarrow{VA} = 3\overrightarrow{VA} + 3\overrightarrow{AB}$

$-2\overrightarrow{VA} = 3\overrightarrow{AB}$

$2\overrightarrow{AV} = 3\overrightarrow{AB}$

$\overrightarrow{AV} = \frac{3}{2}\overrightarrow{AB}$



2) $\overrightarrow{WA} = -2\overrightarrow{WB}$

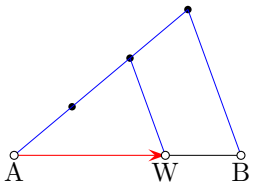
$\overrightarrow{WA} = -2(\overrightarrow{WA} + \overrightarrow{AB})$

$\overrightarrow{WA} = -2\overrightarrow{WA} - 2\overrightarrow{AB}$

$3\overrightarrow{WA} = -2\overrightarrow{AB}$

$3\overrightarrow{AW} = 2\overrightarrow{AB}$

$\overrightarrow{AW} = \frac{2}{3}\overrightarrow{AB}$



3) $\overrightarrow{AX} = \frac{4}{5}\overrightarrow{XB}$

$\overrightarrow{XA} = -\frac{4}{5}\overrightarrow{XB}$

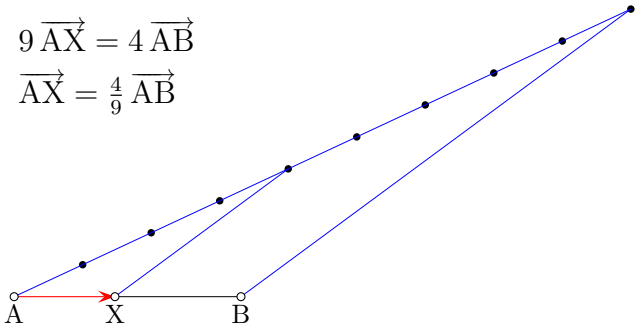
$\overrightarrow{XA} = -\frac{4}{5}(\overrightarrow{XA} + \overrightarrow{AB})$

$\overrightarrow{XA} = -\frac{4}{5}\overrightarrow{XA} - \frac{4}{5}\overrightarrow{AB}$

$\frac{9}{5}\overrightarrow{XA} = -\frac{4}{5}\overrightarrow{AB}$

$9\overrightarrow{AX} = 4\overrightarrow{AB}$

$\overrightarrow{AX} = \frac{4}{9}\overrightarrow{AB}$



4) $\overrightarrow{AY} = -\frac{5}{4}\overrightarrow{YB}$

$\overrightarrow{YA} = \frac{5}{4}\overrightarrow{YB}$

$\overrightarrow{YA} = \frac{5}{4}(\overrightarrow{YA} + \overrightarrow{AB})$

$\overrightarrow{YA} = \frac{5}{4}\overrightarrow{YA} + \frac{5}{4}\overrightarrow{AB}$

$-\frac{1}{4}\overrightarrow{YA} = \frac{5}{4}\overrightarrow{AB}$

$\overrightarrow{AY} = 5\overrightarrow{AB}$