

Section 5.2

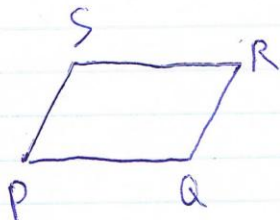
8. b) $D(33, -5, 20)$ $E(6, 4, -16)$ $F(9, 3, -12)$

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$$\vec{DE} = (-27, 9, -36) \quad \vec{EF} = (3, -1, 4)$$

$$\vec{DE} = -9\vec{EF} \quad \text{so } D, E \text{ and } F \text{ are collinear.}$$

10. $P(4, 2)$ $Q(-6, 1)$ $S(-3, -4)$



$$\vec{PQ} = \vec{SR}$$

$$\vec{PQ} = (-10, -1)$$

$$\text{let } R = (x, y)$$

$$\vec{SR} = (x+3, y+4)$$

$$(-10, -1) = (x+3, y+4)$$

$$x+3 = -10 \quad y+4 = -1$$

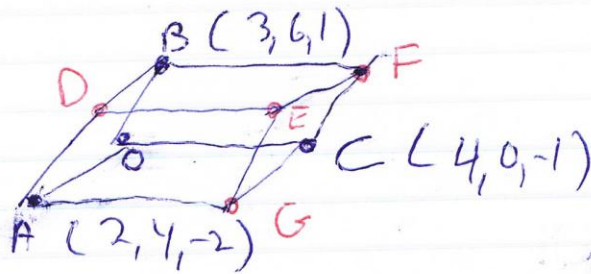
$$x = -13$$

$$y = -5$$

$$\text{so } R \text{ is } (-13, -5)$$

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12.
diagram.



orientation of diagram not important.

$$\vec{OG} = \vec{OA} + \vec{OC} \quad (\text{//gram law})$$

$$\vec{OG} = (6, 4, -3)$$

$$\boxed{G \text{ is } (6, 4, -3)}$$

$$\vec{OE} = \vec{OG} + \vec{GE}$$

$$= \vec{OG} + \vec{OB} \quad (\vec{OB} = \vec{GE})$$

$$= (6, 4, -3) + (3, 6, 1)$$

$$\vec{OE} = (9, 10, -2)$$

$$\circ\circ \boxed{E \text{ is } (9, 10, -2)}$$

$$\vec{OD} = \vec{OA} + \vec{OB} \quad (\text{//gram law})$$

$$\vec{OD} = (5, 10, -1)$$

$$\circ\circ \boxed{D \text{ is } (5, 10, -1)}$$

$$\vec{OF} = \vec{OC} + \vec{OB}$$

$$\vec{OF} = (7, 6, 0)$$

$$\circ\circ \boxed{F \text{ is } (7, 6, 0)}$$

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