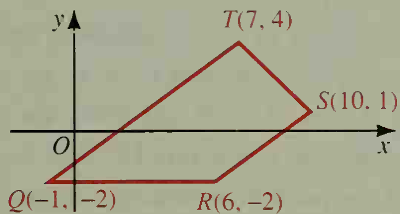
Chapter Review

Exercises 1 and 2 refer to points $X(-2, -4)$, $Y(2, 4)$, and $Z(2, -6)$.

1. Graph X, Y, and Z on one set of axes, then find XY, YZ, and XZ. 13–1
2. Use the distance formula to show that $\triangle XYZ$ is a right triangle.

Find the center and radius of each circle.

3. $(x + 3)^2 + y^2 = 100$
4. $(x - 5)^2 + (y + 1)^2 = 49$
5. Write an equation of the circle that has center $(-6, -1)$ and radius 3.
6. Find the slope of the line through $(-5, -1)$ and $(15, -6)$. 13–2
7. A line with slope $\frac{2}{3}$ passes through $(9, -13)$ and $(0, \underline{\ ?\ })$.
8. A line through $(0, -2)$ has slope 5. Find three other points on the line.
9. What is the slope of a line that is parallel to the x-axis?
10. Show that $QRST$ is a trapezoid. 13–3
11. Since the slope of $\overline{QT}$ is $\underline{\ ?\ }$, the slope of an altitude to $\overline{QT}$ is $\underline{\ ?\ }$.
12. If U is a point on $\overline{QT}$ such that $\overline{UR} \parallel \overline{ST}$, then U has coordinates $(\underline{\ ?\ }, \underline{\ ?\ })$.



13. Given points $P(3, -2)$ and $Q(7, 1)$, find **(a)** $\overrightarrow{PQ}$, **(b)** $|\overrightarrow{PQ}|$, and **(c)** $-2\overrightarrow{PQ}$. 13–4
14. Find the vector sum $(2, 6) + 3(1, -2)$ and illustrate with a diagram.

Find the coordinates of the midpoint of the segment that joins the given points.

15. $(7, -2)$ and $(1, -1)$
16. $(-4, 5)$ and $(2, -5)$
17. (a, b) and $(-a, b)$ 13–5
18. $M(0, 5)$ is the midpoint of $\overline{RS}$. If S has coordinates $(11, -1)$, then R is point $(\underline{\ ?\ }, \underline{\ ?\ })$.
19. Graph the line $y = 2x - 3$.
20. Graph the line $x + 2y = 4$. 13–6
21. Find the point of intersection of the two lines in Exercises 19 and 20.
22. Find an equation of the line with slope 4 and y-intercept 7. 13–7
23. Find an equation of the line through $(-1, 2)$ and $(3, 10)$.
24. If $OPQR$ is a parallelogram, what are the coordinates of Q? 13–8
25. Let M be the midpoint of $\overline{RQ}$ and N be the midpoint of $\overline{OP}$. Use coordinate geometry to prove that $ONQM$ is a parallelogram. 13–9