8-4a Do Now: Applying Algebra to Geometric Situations

1. The line l has the equation $y = \frac{3}{2}x + 7$. To each line below, circle whether l is parallel, perpendicular, or neither.

   (a) parallel perpendicular neither $y = -\frac{2}{3}x - 2$

   (b) parallel perpendicular neither $y = \frac{3}{2}x + 9$

   (c) parallel perpendicular neither $2x - 3y = -5$

   (d) parallel perpendicular neither $3x + 2y = 6$

2. What is the equation of a line through the point $A(-1, 3)$ and parallel to the line $y = \frac{1}{2}x - 5$? (hint: use the point-slope formula, $y - y_A = m(x - x_A)$)

3. Simplify each expression. (Leave it in radical form if necessary, not a decimal.)

   (a) $\sqrt{18}$ (b) $\sqrt{\frac{1}{9}}$

4. Write down the center and radius of each circle.

   (a) $(x + 5)^2 + y^2 = 36$ (c) $(x - 3)^2 + (y - 3)^2 = 5^2$

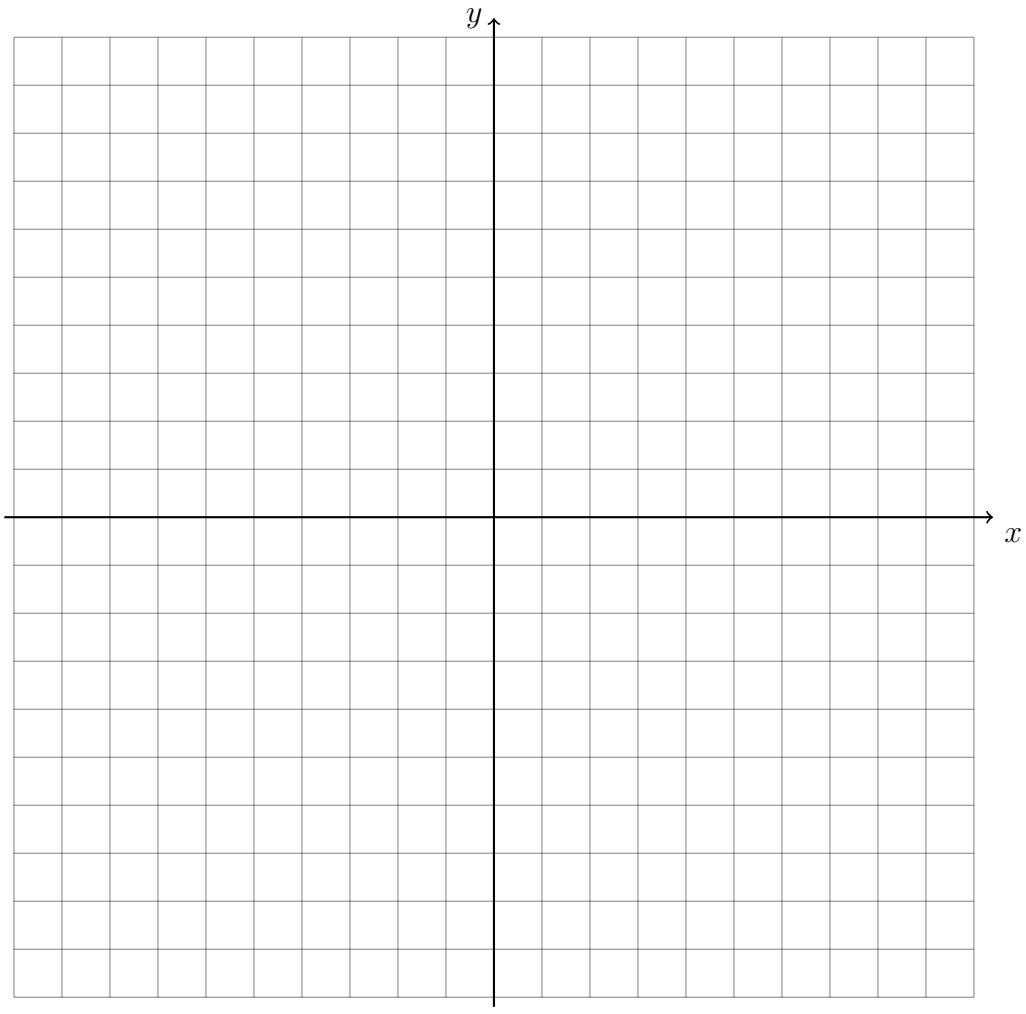
   (b) $(x - 3)^2 + (y + 1)^2 = 72$ (d) $(x + 4)^2 + (y + 8)^2 = 9$

5. $\triangle ABC$, specified below, undergoes two tranformations. First, it is rotated 90° counterclockwise around B. Then it is translated $x \to x + 3$, $y \to y - 6$. Complete a table showing the coordinates of the translated points and plot the three triangles on the grid.

   $A(-7, 3) \to$

   $B(-3, 3) \to$

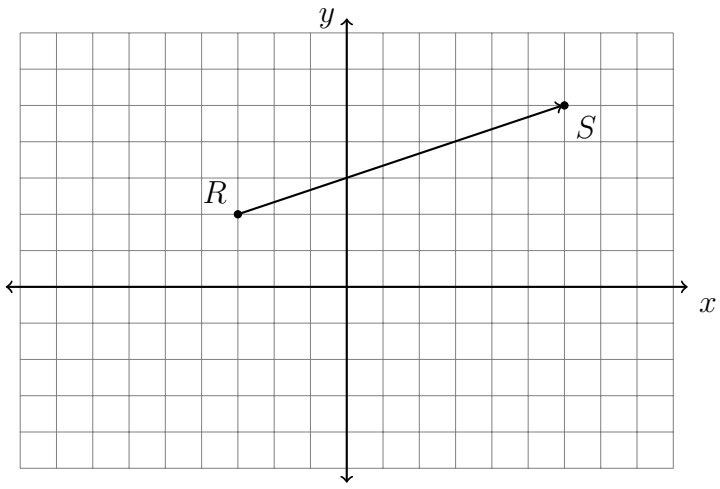
   $C(-4, -2) \to$



8-4a Classwork: Distance formula, line segments

1. A translation maps $A(3, 2) \to A'(5, 7)$. What is the image of $B(-8, 5)$ under the same translation?

2. As shown below, what is the translation that maps the point $R(-3, 2)$ onto the point $S(6, 5)$?



   If only one third of that translation was performed, what coordinates would R be mapped to?

3. Given $A(-2, 4)$ and $B(3, -1)$, find the length of $\overline{AB}$. Leave the result in simplified radical form (not a decimal).

In the following two problems, solve for the value of x.

4. $\frac{1}{5}(2x+3)=1$

5. $\frac{1}{3}(21-3x)=5$

6. Given $f(x)=\frac{1}{4}x+4$. Solve for x such that for $f(x)=6$.

7. Given $g(x)=3x^2-7x+5$. Simplify $g(0)$.

8. Given $f(x)=5x-22$. Solve for x such that for $f(x)=3$.

9. Given $h(x)=x^2+6x+5$. Solve $h(x)=0$.