More practice - Chapter 2 (2.1 – 2.4)

Solve the following exercises:

1. Let $9x^2+9y^2+12x-18y-23=0$.
   a. Find the center and radius of the circle.
   b. Graph the circle.
   c. Find the intercepts (if any).

2. Let $\left(-\frac{3}{4},-\frac{1}{3}\right)$ and $\left(\frac{3}{8},\frac{5}{6}\right)$ be two points in a plane. Find:
   a. The distance between the points.
   b. The midpoint of the line segment having the two points as endpoints.

3. Find r such that the line through $(2,6)$ and $(-4,r)$ is
   a. Parallel to the line $2x-3y=4$
   b. Perpendicular to the line $x+2y=1$.

4. Let $f(x)=\frac{3}{x-5}$, $g(a)=\sqrt{3a+5}$, and $v(x)=\frac{x+2}{x^2-25}$.
   a. Find the domain of each function.
   b. Find the intercepts of each function.

Answers:

1. a) $\left(-\frac{2}{3},1\right), r=2$; c) $\left(0,\frac{3\pm4\sqrt{2}}{3}\right), \left(\frac{-2}{3}\pm\sqrt{3},0\right)$; 2. a) $d=\frac{\sqrt{1513}}{24}$; b) $\left(-\frac{3}{16},\frac{1}{4}\right)$; 3. a) 2; b) -6;