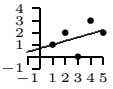
Review 1A

1. Find the equation of the circle with radius 3 and center $(2, 4)$.
2. Find the points on the line $y = 2$ whose distance from $(3, 5)$ is 6.
3. Find the equation of the line through the points $(2, 3)$ and $(-1, 6)$.
4. What is the equation of the line perpendicular to $2x + 3y = 2$ through the point $(2, -1)$?
5. What is the equation of the horizontal line through the point $(2, 5)$?
6. What are the x and y-intercepts of $2x + y = k$?
7. A manufacturer of cockades has a fixed monthly cost of \$5000 and a production cost of \$1 for each cockade produced. If they are sold for \$14 each,
   (a) What is the cost function?
   (b) What is the revenue function?
   (c) What is the profit function?
   (d) What is the profit or loss corresponding to production levels of 100, 500 and 1000 cockades respectively
   (e) What is the break-even point.
8. Find the point of intersection of the lines $\begin{cases} 3x + 2y + 1 = 0 \\ y = \frac{1}{2}x + 4 \end{cases}$.
9. The following data relates girls' length to age. State and solve the normal equations to find the least squares line.

Age (in months),x	3	6	9	18	30
Length (in cm),y	59	65	70	80	91

Use the least squares line to determine the length at 24 months.

Answers (Not Solutions) to the problems on the other side: 1. $(x - 20)^2 + (y + 2)^2 = 144$; 2. $2\sqrt{37}$; 3. $y = 4x + 2$; 4. $y = -2x - 3$; 5. $x = a$; 6. x-intercept is $x = 6$, y-intercept is $y = 4$; 7.(a) $C(x) = 8x + 500$, (b) $R(x) = 15x$, (c) $P(x) = 7x - 500$, (d) loss of \$430, loss of \$150, profit of \$200 (e) about 71; 8. $(1, 2)$; 9. $5b + 15m = 8$, $15b + 55m = 27$, $y = .3x + .7$



Review 1B

1. Find the equation of the circle with radius 12 and center $(20, -2)$.
2. Find the distance from $(-3, 5)$ to $(-1, -7)$.
3. Find the equation of the line through the points $(-1, -2)$ and $(1, 6)$.
4. What is the equation of the line parallel to $2x + y = 2$ through the point $(-2, 1)$?
5. What is the equation of the vertical line through the point (a, b)?
6. What are the x and y-intercepts of $2x - 3y = 12$?
7. A manufacturer of roulettes has a fixed monthly cost of \$500 and a production cost of \$8 for each roulette produced. If they are sold for \$15 each,
   (a) What is the cost function?
   (b) What is the revenue function?
   (c) What is the profit function?
   (d) What is the profit or loss corresponding to production levels of 10, 50 and 100 roulettes respectively
   (e) What is the break-even point.
8. Find the point of intersection of the lines $\begin{cases} 2x + 3y = 8 \\ x - 4y = -7 \end{cases}$.
9. State and solve the normal equations to find the least squares line for the following points.

x	1	2	3	4	5
y	1	2	0	3	2

   Graph the points and least squares line together.

Answers (Not Solutions) to the problems on the other side: 1. $(x-2)^2+(y-4)^2 = 9$; 2. $(3 \pm 3\sqrt{3}, 2)$; 3. $y = -x + 5$; 4. $y = \frac{3}{2}x - 4$; 5. $y = 5$; 6. x-intercept is $x = k/2$, y-intercept is $y = k$; 7.(a) $C(x) = x + 5000$, (b) $R(x) = 14x$, (c) $P(x) = 13x-5000$, (d) loss of \$3700, profit of \$1500, profit of \$8000, (e) about 385; 8. $(-\frac{9}{4}, \frac{23}{8})$; 9. $5b + 66m = 365$, $66b + 1350m = 5367$, $y = 1.147x + 57.865$, 85.38cm.