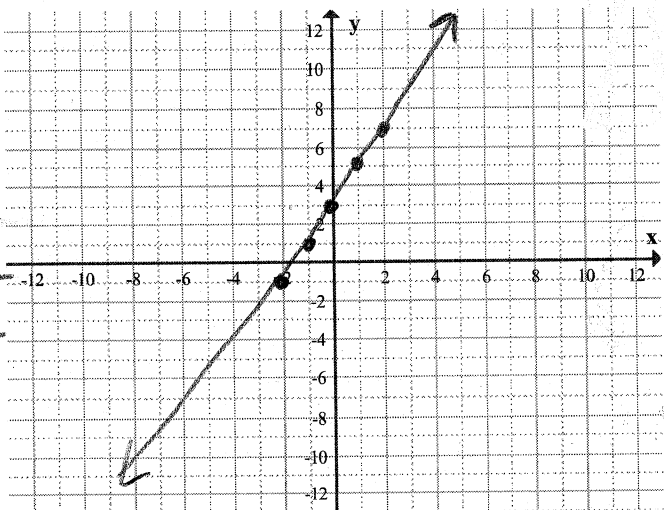


MAC1105 College Algebra  
2.1 Practice Problems

1. Graph the following equations using the plotting points method.

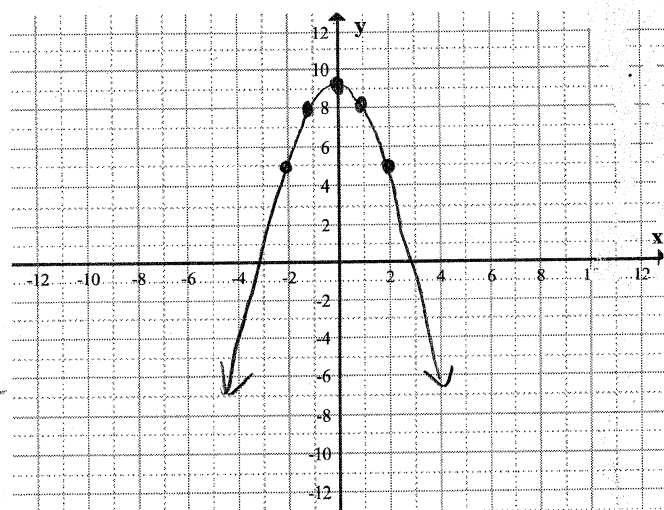
a.  $y=2x+3$

| x  | y                 | (x,y)     |
|----|-------------------|-----------|
| -2 | $2(-2)+3=-4+3=-1$ | $(-2,-1)$ |
| -1 | $2(-1)+3=-2+3=1$  | $(-1,1)$  |
| 0  | $2(0)+3=0+3=3$    | $(0,3)$   |
| 1  | $2(1)+3=2+3=5$    | $(1,5)$   |
| 2  | $2(2)+3=4+3=7$    | $(2,7)$   |



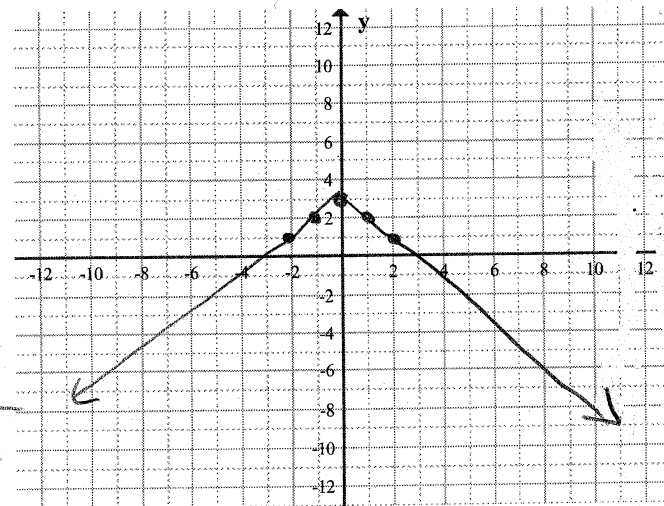
b.  $y=9-x^2$

| x  | y                | (x,y)    |
|----|------------------|----------|
| -2 | $9-(-2)^2=9-4=5$ | $(-2,5)$ |
| -1 | $9-(-1)^2=9-1=8$ | $(-1,8)$ |
| 0  | $9-0^2=9-0=9$    | $(0,9)$  |
| 1  | $9-1^2=9-1=8$    | $(1,8)$  |
| 2  | $9-2^2=9-4=5$    | $(2,5)$  |



c.  $y=-|x|+3$

| x  | y                | (x,y)    |
|----|------------------|----------|
| -2 | $- -2 +3=-2+3=1$ | $(-2,1)$ |
| -1 | $- -1 +3=-1+3=2$ | $(-1,2)$ |
| 0  | $- 0 +3=0+3=3$   | $(0,3)$  |
| 1  | $- 1 +3=-1+3=2$  | $(1,2)$  |
| 2  | $- 2 +3=-2+3=1$  | $(2,1)$  |



2. Find the distance between the two points given. (2,3) and (-1,5).  
 $x_1 y_1$     $x_2 y_2$

$$\begin{aligned}d &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\&= \sqrt{(-1 - 2)^2 + (5 - 3)^2} \\&= \sqrt{(-3)^2 + (2)^2} \\&= \sqrt{9 + 4} \\&= \sqrt{13}\end{aligned}$$

3. Find the distance between the two points given. (1,1) and (5,3).

$$\begin{aligned}d &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\&= \sqrt{(5 - 1)^2 + (3 - 1)^2} \\&= \sqrt{4^2 + 2^2} \\&= \sqrt{16 + 4} \\&= \sqrt{20} = \sqrt{4 \cdot 5} = 2\sqrt{5}\end{aligned}$$

4. Find the midpoint of the line segment given the two endpoints. (-2,3) and (4, -9).

$$\begin{aligned}&\left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) \\&= \left( \frac{-2 + 4}{2}, \frac{3 + -9}{2} \right) \\&= \left( \frac{2}{2}, \frac{-6}{2} \right) = (1, -3)\end{aligned}$$

5. Find the midpoint of the line segment given the two endpoints. (1,-5) and (-4, -1).

$$\begin{aligned}&\left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) \\&= \left( \frac{1 + -4}{2}, \frac{-5 + -1}{2} \right) \\&= \left( \frac{-3}{2}, \frac{-6}{2} \right) = \left( -\frac{3}{2}, -3 \right)\end{aligned}$$