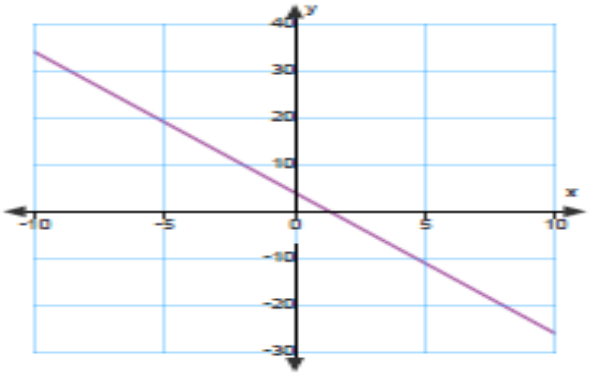
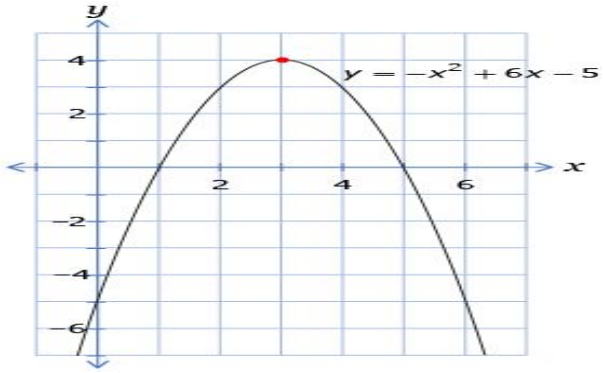
Quadratic Functions Review

1. For each of the following graphs, state the domain, range and decide if the relations are functions. Justify your answer.





2. Given the relation $f(x) = 2x - 6$

a) Evaluate f(-2) b) Create a table of values then Graph c) Is it a function?

3. Find the range of $y = 3x + 1$, if the domain ={-3,-2,-1,0,1,2,3}

4. Expand and simplify

a) $(x-2)^2$ b) $4(x+3)(x-4)-2(x-1)^2$ c) $(x+2)^2+(x-1)^2$ d) $3(x-1)^2+4(x-1)(x+2)$

5. **Fully** factor each of the following if possible.

a) $5xy-10x^2y$ b) x^2-49 c) $12m^2n^3+18m^3n^2$ d) $3x^2-27$ e) $x^2-9x+20$

f) $3x^2+24x+45$ g) $x^2-4x-32$

6. Graph each of the quadratic functions.

a) $y=(x-3)(x-5)$ b) $y=-(x-2)(x+3)$ c) $y=x^2-4x+3$ d) $y=(x+2)^2-3$

7. Determine the vertex by completing the square for each of the following.

a) $y=x^2-8x+5$ b) $y=2x^2-4x-7$

8. Solve each of the following using the quadratic formula. (Round to 2 dec. places)

a) $2x^2-x-3=0$ b) $3x^2+10x=7$

9. For what value of k does the equation $2x^2-x+k=0$ have two distinct roots?

10. A baseball player hits a baseball from a height of 1m above the ground. The flight of the ball is given by $h(t)=-5t^2+10t+1$ where h is the height and t is the time in seconds. When does the ball reach the maximum height? How high is it?

11. Use the properties of transformations to sketch each of the following.

a) $y=x^2-4$ b) $y=(x-3)^2$ c) $y=2(x+2)^2$ d) $y=-3(x+3)^2-4$