Name: KEY

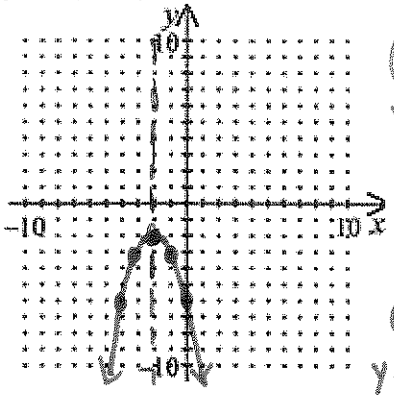
Algebra 2

Practice Test (Ch. 4 Part 1)

Chapter 4 Part 1 Practice Test - No Calculator for problems 1-5!!!!!

1. $y = -(x+2)^2 - 2$

vertex: $(-2,-2)$



$(-1,?)$

$y = -(-1+2)^2 - 2$

$= -(1)^2 - 2$

$= -1-2 = -3$

$(-1,-3)$

$(0,?)$

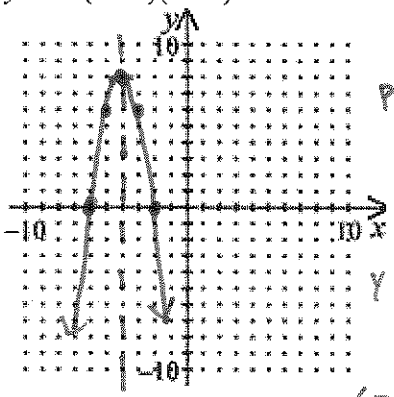
$y = -(0+2)^2 - 2$

$= -(2)^2 - 2$

$= -4-2 = -6$

$(0,-6)$

2. $y = -2(x+2)(x+6)$



x-int = -2 and -6

$p = -2,\ q = -6$

$\frac{p+q}{2} = \frac{-8}{2} = -4$

$(-4,?)$

$y = -2(-4+2)(-4+6)$

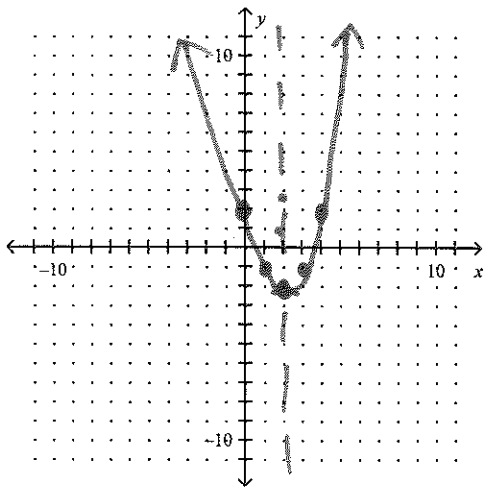
$= -2(-2)(2)$

$= 8 \quad (-4,8)$

$(-3,?)$ $y = -2(-1)(3)$

$= 6 \quad (-3,6)$

3. $y = x^2 - 4x + 2$



$\frac{-b}{2a} = \frac{4}{2(1)}$

$= 2$

$(2,?)$

$y = 2^2 - 4(2) + 2$

$= 4 - 8 + 2 = -2$

vertex $(2,-2)$

$c = 2 = y\text{-int.}$

$(1,?)$

$y = 1^2 - 4(1) + 2$

$= 1 - 4 + 2 = -1$

$(1,-1)$

4. How does the graph of $y = (x+3)^2$ compare to the graph $y = x^2$?

Because of the +3 it is shifted 3 units left.

5. How does the graph of $y = x^2 + 4$ compare to the graph of $y = x^2$?

Because of the +4 it is shifted 4 units up

Solve for x.

6. $2x^2 + 9 = 59$

$-9 \quad -9$

$2x^2 = 50$

$\frac{2x^2}{2} = \frac{50}{2}$

$x^2 = 25$

$\sqrt{x^2} = \sqrt{25}$

$x = \pm 5$

7. $\frac{-5(x-8)^2}{-5} = \frac{-110}{-5}$

$(x-8)^2 = 22$

$\sqrt{(x-8)^2} = \sqrt{22}$

$x - 8 = \pm\sqrt{22}$

$x - 8 = \pm\sqrt{22}$

$+8 \quad +8$

$x = 8 \pm \sqrt{22}$

Factor the expression.

8. $x^2 - x - 12$

$(x-4)(x+3)$

9. $x^2 + 10x + 25$

$(x+5)^2$ or $(x+5)(x+5)$

10. $81x^2 - 25$ Difference of 2 squares

$(9x+5)(9x-5)$

11. $5x^2 - 33x - 14$

$(5x+2)(x-7)$

Solve the quadratic equation by factoring.

12. $x^2 + 6x = 0$

$x(x+6) = 0$

$x = 0$ or $x+6=0$

$x = 0$ or -6

13. $2x^2 - 9x - 18 = 0$

$(2x+3)(x-6)$

$2x+3=0$ $\quad x-6=0$

$2x=-3$ $\quad x=6$

$x=-\frac{3}{2}$

14. $x^2 - 2x - 63 = 0$

$(x-9)(x+7)$

$x-9=0$ $\quad x+7=0$

$x=9$ $\quad x=-7$

* 15. $2x^2 + \frac{3}{4}x - 5 = 0$ * change in equation

$(2x+5)(x-1)$

$2x+5=0$ $\quad x-1=0$

$2x=-5$ $\quad x=1$

$x=-\frac{5}{2}$

16. An online magazine currently charges \$12 a month to its subscribers, but is considering raising their price. The company found that the monthly revenue y can be modeled by the function $y = -700(x-50)(x+10)$ where x is the number of \$.10 increases in the monthly price.

a. *F*ind the x-value that will maximize monthly revenue.

$p=50$ $\quad q=-10$

$\frac{p+q}{2} = \frac{50+-10}{2} = \frac{40}{2} = 20$

b. What is the maximum monthly revenue?

$y = -700(20-50)(20+10)$

$= -700(-30)(30)$

$= \$630{,}000$

17. The base of a triangle is four feet longer than the height. The area of the triangle is 30 square feet. Find the height and base of the triangle.

h = height

$h+4$ = base

$\text{Area} = \frac{1}{2}bh$

$= \frac{1}{2}(h+4)h = 30$

$\frac{1}{2}h(h+4) = 30$

$h(h+4) = 60$

$h^2 + 4h = 60$

$h^2 + 4h - 60 = 0$

$(h+10)(h-6) = 0$

$h+10=0$ $\quad h-6=0$

$h=-10$ $\quad h=6$

height $= 6$

$h+4$ → base $= 10$