Learning Guide 6/7 Test A – **Answer Key**

Multiple Choice

1) B
2) C
3) D
4) A
5) C
6) C
7) A
8) C
9) ~~B~~ B
10) D
11) B

Completion

1) Y = 3 (x + 13) (x + 20)

2) two

3) $-0.75x^2 - 2.25x - 1.5$ or $-\frac{3}{4}x^2 - \frac{9}{4}x - \frac{3}{2}$

Math 11 Precalculus

Learning Guide 6/7 Test A

Short Answer: Show **All** Work in an organized fashion and **Circle** your final answers.

1) Describe the situations in which the graph of a quadratic equation will have one solution, no solution and two solutions.

One solution- the parabola touches the x axis at the vertex only.

No solution- the parabola does not touch the x axis. (vertex above x axis and going up or below and going down)

Two solutions- the parabola crosses the x axis at 2 places.

2) Using the coordinate grid below, graph the solutions of the quadratic equation.

$y = -x^2 + 4x + 5$

$y = -1(x^2 + 4x + \_\_) + 5$

$y = -1(x^2 + 4x + 4) + 5 + 4$

$y = -1(x-2)^2 + 9$

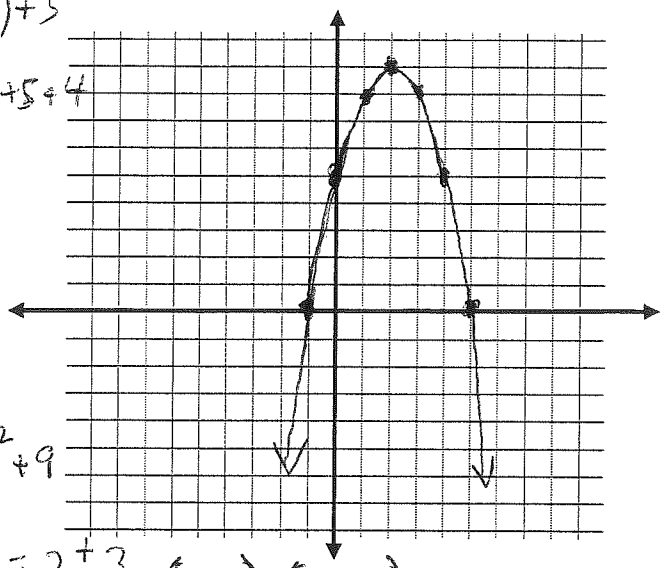
vertex = (2, 9)

y int. = (0, 5)

x int $0 = -1(x-2)^2 + 9$

$9 = (x-2)^2$

$\pm 3 = x - 2$ $\quad x = 2 \pm 3$ $\quad (5,0)\ (-1,0)$



3) Use the method of factoring to determine the roots of the following quadratic equation. State answers as exact values.

$y = -3x^2 + 5x + 12$

$Y = -3x^2 + 9x - 4x + 12$

$Y = -3x(x-3) - 4(x-3)$

$Y = (-3x-4)(x-3)$

$Y = -1(3x+4)(x-3)$ ⇒

Find 2 numbers which:
multiply = -36
add = 5
9, -4

$3x + 4 = 0$
$-4 \quad -4$
$3x = -4$
$x = -\frac{4}{3}$

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

4) Use the quadratic formula to determine the zeros of the following quadratic function. State answers as exact values.

$y = 4x^2 - 17x + 5$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{17 \pm \sqrt{(-17)^2 - 4(4)(5)}}{2(4)} = \frac{17 \pm \sqrt{289 - 80}}{8}$

$= \boxed{\frac{17 \pm \sqrt{209}}{8}}$

5) Determine the value of the descriminant, and the nature of the roots for the following quadratic equation.

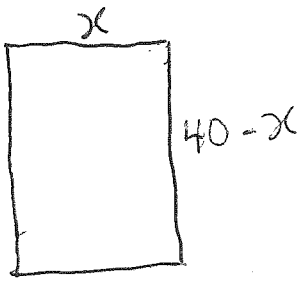
$y = -2x^2 + 5x - 4$

$b^2 - 4ac = 5^2 - 4(-2)(-4)$

$= 25 - 32$

$= (-7)$ → No real roots

6) A farmer has 80m of fencing available to close in a rectangular garden in order keep the animals out. Determine the dimensions that will produce a garden of area $320m^2$ or larger. (Sketch a diagram if needed) Round answers to the nearest tenth of a metre.



$L \times W = A$

$x(40 - x) = 320$

$40x - x^2 = 320$

$0 = x^2 - 40x + 320$

$0 = (x^2 - 40x + 400) + 320 - 400$

$0 = (x - 20)^2 - 80$

$80 = (x - 20)^2$

$\pm\sqrt{80} = x - 20$

$x = 20 \pm \sqrt{80}$ → 12.1, 27.9

$\boxed{12.1_m \leq x \leq 27.9_m}$