Intermediate Algebra
Tri B MC Practice Final

Name_____
Hour_____

1. What is the vertex of $y = 2(x + 1)^2 - 5$?

- vertex form
- what makes 0
- $x+1=0$, $x=-1$, $y=-5$, $(-1,-5)$

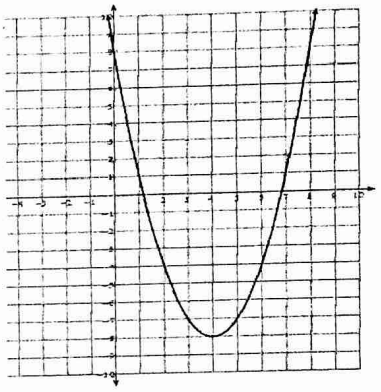
A) (2, -5)
B) (-1, -5)
C) (1, -5)
D) (2, 1)

2. What is the vertex of $y = -x^2 + 4x + 3$?

$x = \frac{-b}{2a}$, $x = \frac{-4}{2(-1)} = \frac{-4}{-2} = 2$, sub x into & find y

A) (2, 15)
B) (-2, 7)
C) (-2, 15)
D) (2, 7)

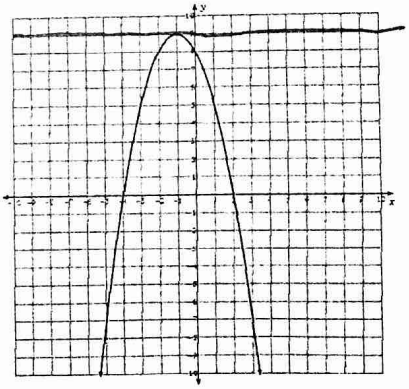
3. The following graph has the equation $y = ax^2 + bx + c$. Find the value of c.



A) c = 4
B) c = 0
C) c = 8
D) Can't tell from the graph

- because it is y-intercept

4. Determine the domain and range of the following quadratic function:



highest y

A) ~~Domain = $-4 \le x \le 2$~~
Range = $y \le 9$
B) Domain = all real numbers
Range = $y \ge 9$
C) Domain = all real numbers
Range = $y \le 9$
D) Domain = all real numbers
Range = $y \le -1$

5. The height in feet of a volleyball that is served can be modeled by the function $h(t) = -16t^2 + 32t + 6$ where t is the time in seconds after the ball is served and $h(t)$ is height. What is the maximum height in feet the volleyball will reach?

Find vertex

A) 1 foot
B) 6 feet
C) 22 feet
D) 32 feet

$x = \frac{-b}{2a} = \frac{-32}{2(-16)} = \frac{-32}{-32} = 1$ second

find y using Alg or Calc

$y = 22$

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6. Write the following function into standard form: $y = (7x - 1)(3x + 6)$

$21x^2 + 42x - 3x - 6$

$21x^2 + 39x - 6$

A) $y = 21x^2 - 45x + 6$
B) $y = 7x^2 + 15x + 8$
C) $y = 21x^2 - 6$
D) $y = 21x^2 + 39x - 6$

7. Write the following function into standard form: $y = (3x + 3)^2 - 4$

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

$9x^2 + 9x + 9x + 9 - 4$

$9x^2 + 18x + 9 - 4$

$9x^2 + 18x + 5$

A) $y = 9x^2 + 18x + 5$
B) $y = 9x^2 + 18x + 9$
C) $y = 9x^2 + 9$
D) $y = 9x^2 + 5$

8. Multiply: $(2x - 4)^2$

$(2x-4)(2x-4) = 4x^2 - 8x - 8x + 16$

$4x^2 - 16x + 16$

A) $4x^2 - 16$
B) $4x^2 + 16$
C) $4x^2 - 16x + 16$
D) $4x^2 + 16x - 16$

9. Which is the standard form of the quadratic equation with x-intercepts of (-2, 0) and (3, 0)?

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

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

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

$x^2 - 3x + 2x - 6$

$x^2 - x - 6$

A) $y = x^2 - x - 6$
B) $y = x^2 + 5x + 6$
C) $y = x^2 + x - 6$
D) $y = x^2 - 5x + 6$

10. What is one of the factors of the following equation: $y = x^2 + 8x - 9$

$(x - 1)(x + 9)$

A) $(x + 1)$
B) $(x - 1)$
C) $(x - 9)$
D) $(x + 8)$

11. What are the factors of the following equation? **Choose all that apply.**

$y = 5b^2 - 8b + 3$

$(5b - 3)(1b - 1)$

A) $(5b + 3)$
B) $(b + 1)$
C) $(5b - 3)$
D) $(b - 1)$
E) $(b - 1)$
F) $(b + 3)$

12. Which of the following is a factor of $4x^2 - 9$?

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

A) $(4x + 9)$
B) $(2x - 9)$
C) $(4x + 3)$
D) $(2x + 3)$

13. What are the x-intercepts of the following equation: $y = 5x^2 - 25x - 30$

$y = 5(x^2 - 5x - 6)$

$y = 5(x + 1)(x - 6)$

$x + 1 = 0$ $\quad x - 6 = 0$

$x = -1$ $\quad x = 6$

A) (-6, 0) (1, 0)
B) (-2, 0) (-3, 0)
C) (2, 0) (3, 0)
D) (6, 0) (-1, 0)

14. Solve the quadratic equation: $x^2 - 6x - 40 = 0$

$\text{Dis}: (-6)^2 - 4(1)(-40) = 196$

$x = \frac{6 \pm \sqrt{196}}{2(1)} = \frac{6 \pm 14}{2} = \frac{6+14}{2} = 10 \quad \frac{6-14}{2} = -4$

A) $x = 10, x = -4$
B) $x = -10, x = 4$
C) $x = 5, x = 8$
D) $x = -5, x = 8$

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15. Solve the quadratic equation: $2x^2 - 48 = 2$

A) $x = \sqrt{5}, x = -\sqrt{5}$
B) $x = -25, x = 25$
C) $x = 5$
D) $x = -5, x = 5$

16. Solve the quadratic equation: $x^2 + 5x = -2$

A) $x = \frac{-5+\sqrt{33}}{2}, x = \frac{-5-\sqrt{33}}{2}$
B) $x = \frac{-5+i\sqrt{13}}{2}, x = \frac{-5-i\sqrt{13}}{2}$
C) $x = \frac{-5+\sqrt{17}}{2}, x = \frac{-5-\sqrt{17}}{2}$
D) $x = \frac{-5+i\sqrt{3}}{2}, x = \frac{-5-\sqrt{13}}{2}$

17. Solve the quadratic equation: $4x^2 = 2 - 4x$

A) $-1 \pm 2\sqrt{3}$
B) $-2 \pm \sqrt{3}$
C) $\frac{-1\pm 4\sqrt{3}}{2}$
D) $\frac{-1\pm\sqrt{3}}{2}$

18. Simplify the radical completely: $\sqrt{32}$

A) $2\sqrt{8}$
B) $4\sqrt{2}$
C) $2\sqrt{4}$
D) 16

19. Simplify the radical completely: $\sqrt{-75}$

A) $i\sqrt{75}$
B) $5\sqrt{3}$
C) $5i\sqrt{3}$
D) $3i\sqrt{5}$

20. The discriminant tells us the _____. **Choose all that apply.**

A) Number of zeros
B) Number and type of solutions
C) Number of x-intercepts
D) Solutions
E) Value of the x-intercepts

21. How many solutions and what type will the following quadratic equation have?

$x^2 + 4x + 4 = 0$

A) 2 Real Solutions
B) 2 Imaginary Solutions
C) 1 Real Solution
D) 1 Imaginary Solution

22. How many solutions and what type with the following quadratic equation have?

$x^2 + 8x = 7$

A) 2 Real Solutions
B) 2 Imaginary Solutions
C) 1 Real Solution
D) 1 Imaginary Solution

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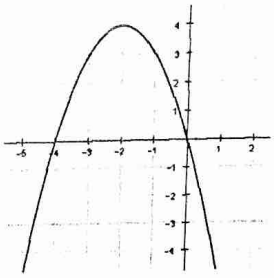
23. Which of the following quadratic equations will have imaginary solutions? **Choose all that apply.**

A) $2x^2 + 5x = -10$
B) $x^2 - 15 = 0$
C) $-4x^2 = 2 + x$
D) $x^2 + 9 = 0$
E) $x^2 - 3x + 5 = 0$
F) $x^2 + 5x = 14$

Graph or find DIS

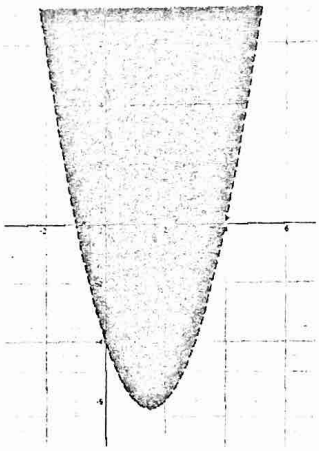
24. Given the following graph of a quadratic equation, what will the discriminant be?

A) Positive
B) Negative
C) Zero



25. Which equation matches the given graph?

A) $y < (x + 1)(x - 4)$
B) $y > (x + 1)(x - 4)$
C) $y < (x - 1)(x + 4)$
D) $y > (x - 1)(x + 4)$



test (0,0)

$0 > (0+1)(0-4)$

$0 > (1)(-4)$

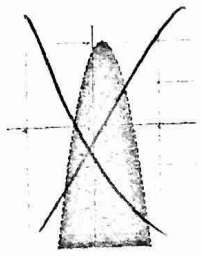
$0 > -4$ Yes

y-int = -4

Graph and checkpoint

26. Which graph is of the function $y < 2x^2 - 3x - 9$

A



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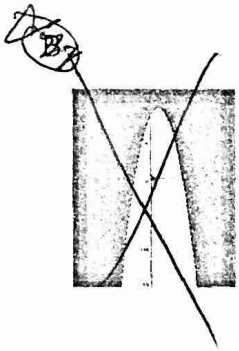

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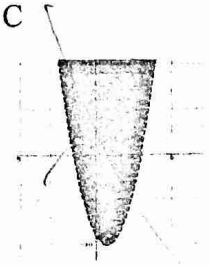

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