Get a calculator and get ready to review for the test tomorrow!

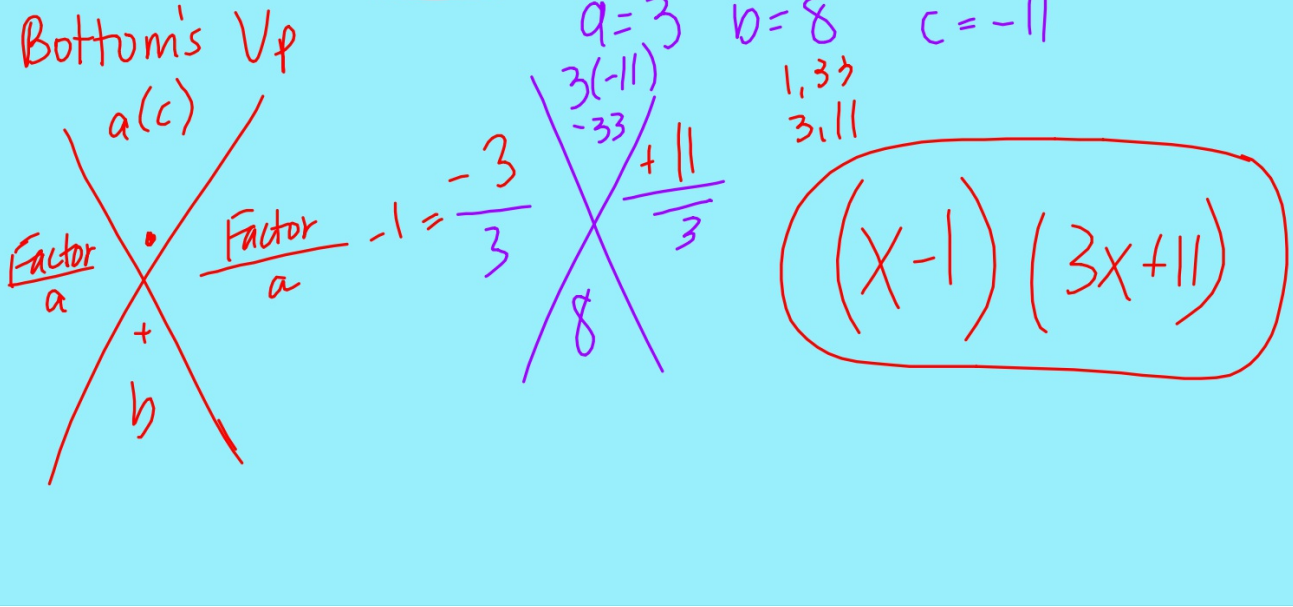
Standard Form: $y = ax^2 + bx + c$

Vertex Form: $y = a(x-h)^2 + k$

vertex/axis of symmetry = $x = \frac{-b}{2a}$

Quadratic Formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

1. Find the factors of $3x^2 + 8x - 11$?



2. Find the zeros of the function $y = x^2 - 5x - 24$.

Quadratic Formula $a = 1$ $b = -5$ $c = -24$

$$\frac{-(-5) \pm \sqrt{(-5)^2 - 4(1)(-24)}}{2(1)}$$

$x = 8$ $x = -3$

3. Solve the equation $5x^2 + 2x - 9 = 0$.

Quadratic Formula $a=5 \quad b=2 \quad c=-9$

$$\frac{-(2) \pm \sqrt{(2)^2-4(5)(-9)}}{2(5)}$$

$X = 1.2 \qquad X = -1.6$

$y = 3(x+4)^2 - 5$

a h k

4. Which direction does the graph open?

up

5. What is the vertex?

(-4, -5)

6. What is the axis of symmetry?

x = -4

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

$a = 1 \quad b = -5 \quad c = 12$

7. Which direction does the graph open?

up

8. What is the vertex?

$\frac{-b}{2a} = \frac{-(-5)}{2(1)} = \frac{5}{2}$ or 2.5

$\left(\frac{5}{2}\right)^2 - 5\left(\frac{5}{2}\right) + 12 = \frac{23}{4}$ or 5.75

$\left(\frac{5}{2}, \frac{23}{4}\right)$

$(2.5, 5.75)$

9. What is the Axis of symmetry of a graph whose vertex is (1, 3)?

$x = 1$

10. If the vertex is (-6, 3) and the graph opens down, is the vertex the minimum or maximum point on the graph?

maximum

11. Use the graph of the function to answer the following question.

Which statement is true about the real solutions of f(x)?

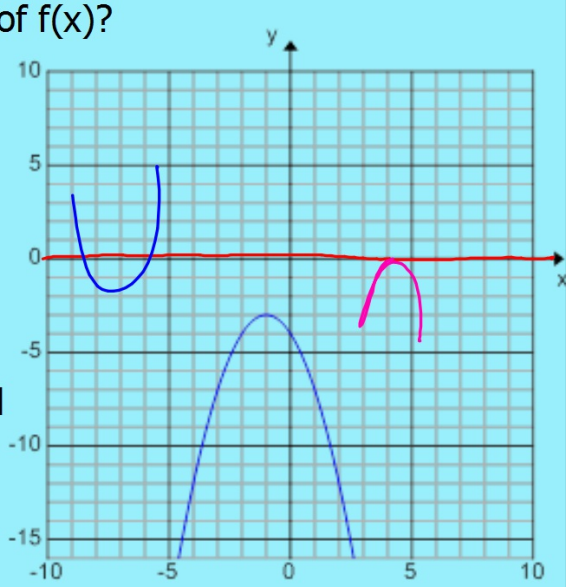
X-axis

a) f(x) has 2 real solutions.

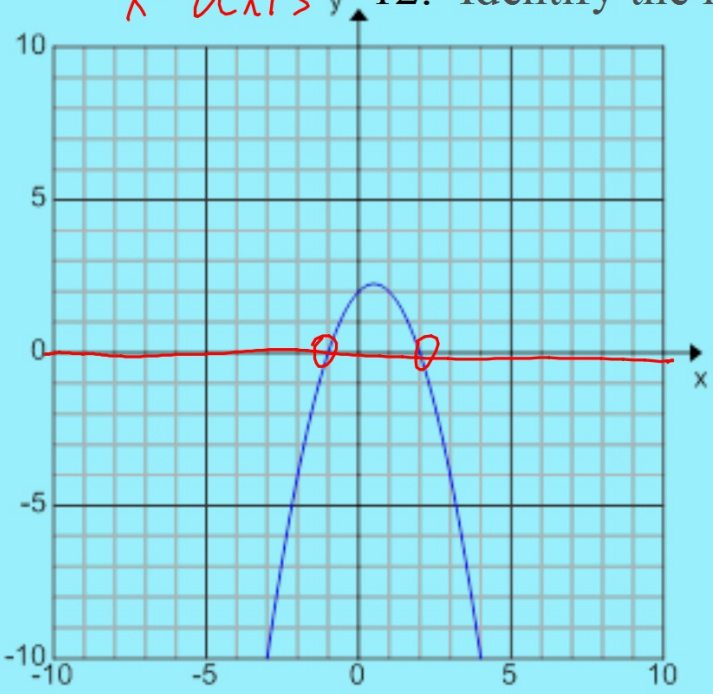
b) f(x) has no real solutions.

c) f(x) has exactly one real solution.

d) the number of solutions cannot be determined



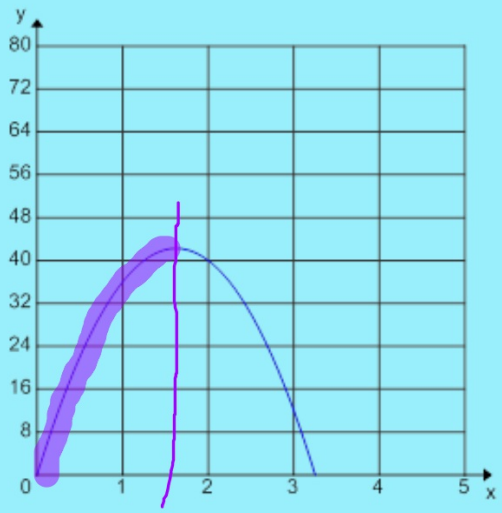
X-axis 12. Identify the roots of the quadratic function.



$x = -1$

$x = 2$

13. A ball was shot upward by a machine that was several feet above the ground with an initial speed of 52 feet per second. The height of the ball at any given time can be represented as $f(x) = -16x^2 + 52x + 4$. The graph at the right represents this function. For which of these times is the rate of change positive?

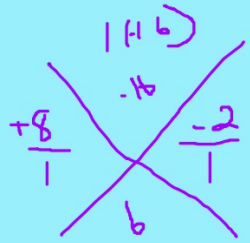


increasing

(0, 1.5)

14. Factor $x^2 + 6x - 16$

Bottom's Up $a = 1$ $b = 6$ $c = -16$



$(x+8)(x-2)$

15. Which of the following is a quadratic equation?

A. $y = \sqrt{3x + 4}$

B. $y = 6x - 1$

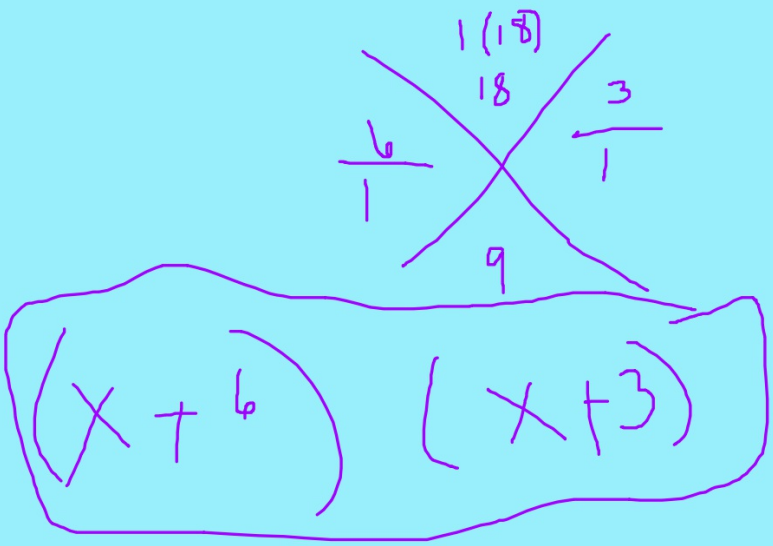
C. $y = 8x^3 + 9$

D. $y = 5x^2 - 4$

16. Give the correct factorization of $x^2 + 9x + 18$.

Bottoms Up

$a = 1$ $b = 9$ $c = 18$



17. What is the vertex for the equation $y = (x-8)^2$? 0

a h k

(8, 0)

18. Solve. $4x^2 = 36$

Quadratic Formula

$-36 \quad -36$

$4x^2 - 36 = 0$

$a = 4$

$b = 0$

$c = -36$

19. Solve. $x^2 - 6x - 15 = 0$

Quadratic Formula

$a = 1 \quad b = -6 \quad c = -15$

$$\frac{-(-6) \pm \sqrt{(-6)^2 - 4(1)(-15)}}{2(1)}$$

$x = 7.9$

$x = -1.9$

20. Simplify. $(x + 3y)^2$

Distribute

$(x+3y)(x+3y)$

$x^2 + 3xy + 3xy + y^2$

$x^2 + 6xy + y^2$