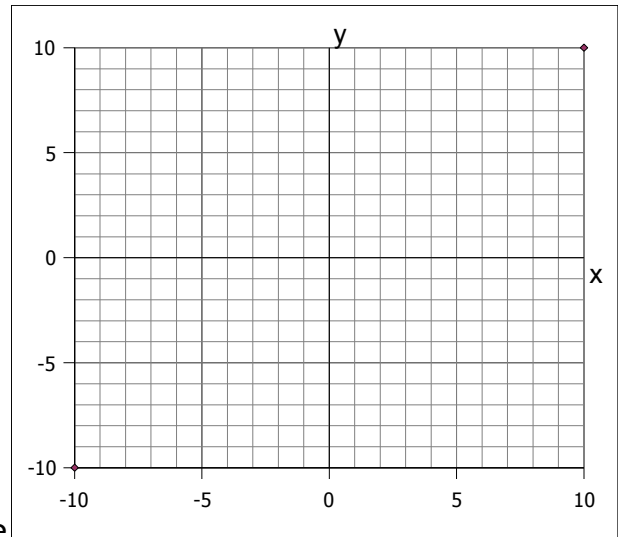


1. For $y = x^2 - 6x + 2$

- a. ____ Find the y-intercept.
- b. ____ Find the x-intercepts.
- c. ____ Find the degree of the equation.
- d. ____ Is the lead coefficient positive or negative?
- e. ____ Will the graph open up or down?
- f. ____



Use slope $m = 2ax + b$ to write the slope equation.

- g. ____ Set the slope equation equal to zero to find the x-coordinate of the vertex.
- h. ____ Use the x-coordinate of the vertex to find the y-coordinate of the vertex.
- i. Use the above information and the type of equation to sketch a graph of the equation. On the graph label the y-intercept, the x-intercepts, the vertex, and sketch the axis of symmetry.
- j. Mark the increasing and decreasing intervals on the graph.
- k. Mark the local minimum and maximums, if any, on the graph.
- l. ____ Does the graph have positive or negative curvature?
- m. ____ Does the graph have an inflection point?
- n. ____ What is the name of the shape of the graph?
- o. ____ Does the graph pass the vertical line test?
- p. ____ Is the equation a function?
- q. ____ Use the x-intercepts to determine the factorization of the equation.

2. Find the center (h, k) and radius of the circle $(x + 3)^2 + (y - 7)^2 = 441$

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3. Solve for x: $2.5x^2 - 15x + 40 = 0$

4. Multiply the following complex numbers: $(3+i\sqrt{7})(3-i\sqrt{7})$

5. Solve for x: $\frac{1+\sqrt{x}}{2} - 1 = \frac{2}{1+\sqrt{x}}$

6. Solve the inequality and sketch the solution on a number line: $-3x + 7 < 28$

7. Find the equation of the line through $(-41, 19)$ and $(-37, 41)$

8. Is $y = -5.5x + 244.5$ parallel, perpendicular, or neither to the line in 7?

9. Is $y = \frac{-2}{11}x + 244.5$ parallel, perpendicular, or neither to the line in 7?

10. On a Tuesday evening I was running and juggling on an out and back from Piyuul to the Malem river bridge. A dog in Malem bit me, inspiring me to run faster. I took 9.15 minutes to run the 1.82 kilometers on the return leg of the run.

a. Given that $\text{pace} = \text{time}/\text{distance}$, what was my pace on Tuesday in minutes per kilometer?

b. Last summer I ran the same distance in 10.8 minutes. What is the percentage change from 10.8 minutes last summer to 9.15 minutes this summer?

c. Does that change represent a faster time or slower time? That is, do I run faster wounded by a dog bite or when not wounded by a dog bite?

11. a. Is the function $f(x)$ depicted in the graph an even or odd function?

b. How many zero's does the function have?

