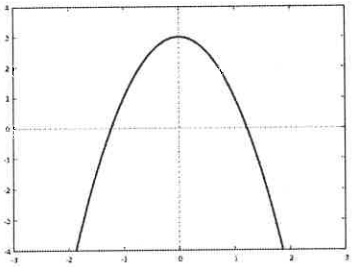
Algebra: Practice Quiz 1

Format and instructions

- The quiz will be 10 questions. (This practice quiz is shorter.) You have the entire 55 minute class period.
- Show all your work in an orderly fashion. Remember: it's not just about getting a correct final answer, it's about being able to communicate how you got that answer.
- The only materials that need to be brought are a pencil or pen. You do not need to bring your own paper to write on.
- Electronic devices, including phones, computers, and calculators, are not allowed during the quiz period.
- You are not allowed to refer to notes or books during the quiz period.
- Please be quiet during the quiz period, so that you are not a distraction to your classmates.
- Individual accommodations may modify these rules.

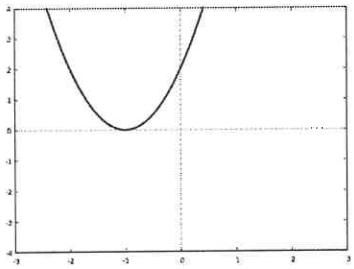
1. Match each graph to the equation which gives it.

D



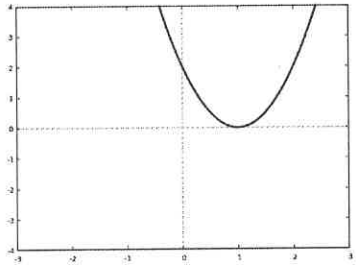
$A(x) = 2(x-1)^2$

B



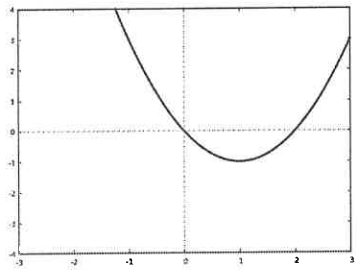
$B(x) = 2(x+1)^2$

A



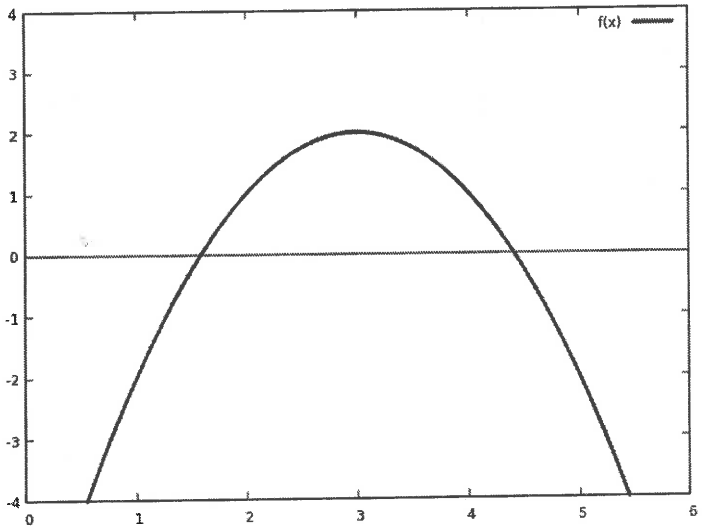
$C(x) = x(x-2)$

C



$D(x) = 3-2x^2$

2. A quadratic function $f(x)$ is graphed below.



(a) How many x-intercepts does $f(x)$ have?

2

(b) How many solutions are there to $f(x) = 3$?

0

(c) What is the vertex of $f(x)$?

(3, 2)

3. Find the y-intercept and all x-intercepts of the function

$$y = -2(x - 4)(x + 2).$$

y-int:

$y = -2(0-4)(0+2)$

$= -2(-4)(2)$

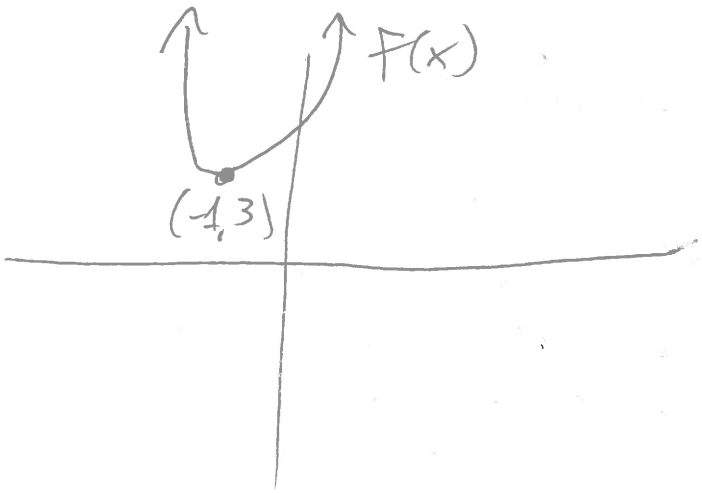
$y = 16$

x-int: $x = 4, -2$

4. Find the vertex of the following function, and sketch a graph of it. Identify the vertex on your graph.

$$f(x) = 2(x+1)^2 + 3$$

vertex $(-1, 3)$



5. Solve the equation

$$\frac{2x^2 - 12x + 10}{2} = \frac{0}{2}$$

by completing the square.

$x^2 - 6x + (-3)^2 - (-3)^2 + 5 = 0$ $\quad 2B = -6 \Rightarrow B = -3$

$(x-3)^2 - 9 + 5 = 0$ $\quad x = 3 \pm 2$

$(x-3)^2 - 4 = 0$ $\quad \boxed{x = 1, 5}$

$(x-3)^2 = 4$

$x - 3 = \pm 2$

6. Fully simplify the expressions involving square roots.

$10\sqrt{32}$ $\qquad$ $\dfrac{\sqrt{18}-3}{\sqrt{225}}$

You can use these prime factorizations to help:

n	factorization
18	2×3^2
32	2^5
225	$3^2 \times 5^2$

$10\sqrt{32} = 10\sqrt{2^5}$

$= 10\sqrt{2^4 \cdot 2}$

$= 10 \cdot 2^2\sqrt{2}$

$= 40\sqrt{2}$

$\dfrac{\sqrt{18}-3}{\sqrt{225}} = \dfrac{\sqrt{2 \cdot 3^2}-3}{\sqrt{3^2 \cdot 5^2}}$

$= \dfrac{3\sqrt{2}-3}{3 \cdot 5}$

$= \dfrac{3(\sqrt{2}-1)}{3 \cdot 5}$

$= \dfrac{\sqrt{2}-1}{5}$