1. Use the graph to find the zeros of the quadratic function. Check that the solutions work.
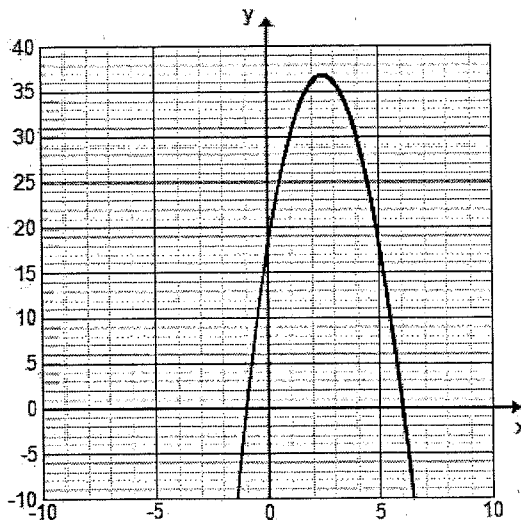
$$f(x) = -3x^2 + 15x + 18$$

Solution(s): ___$x = -1$___ $x = 6$

Check:

$f(-1) = -3(-1)^2 + (15)(-1) + 18$

$\qquad = -3(-1) + (-15) + 18$

$\qquad = -18 + 18 = 0$ ✓

$f(6) = -3(6)^2 + 15(6) + (18)$

$\qquad = -3(36) + 90 + 18$

$\qquad = -108 + 90 + 18 = 0$ ✓

For #2-5, solve by factoring. Show the factors and the answer(s).

2. $9x^2 = 24x - 12$

$x = \dfrac{2}{3}$ $x = 2$

3. $-9x - 2x^2 = 4$
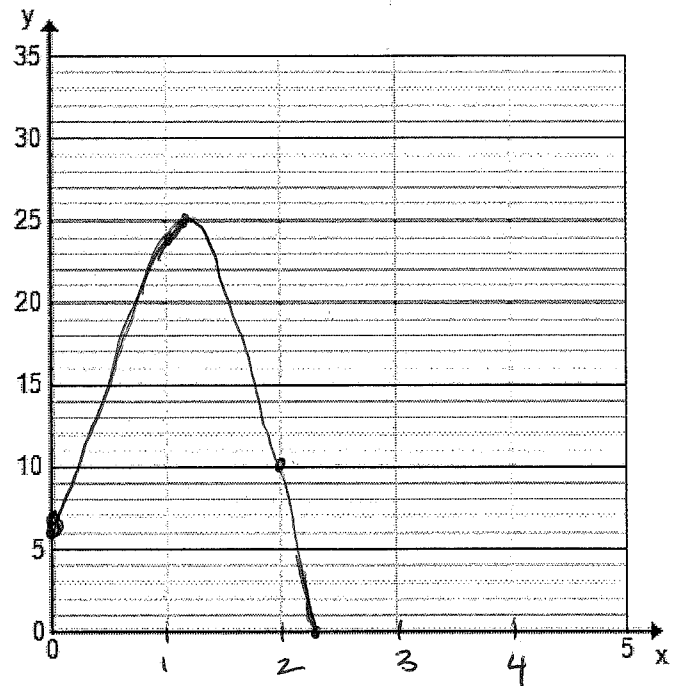
$x = -\dfrac{1}{2}$ $x = -4$

4. $0 = -7x - 4x^2 + 2$

$x = \dfrac{1}{4}$ $x = -2$

5. $6x^2 + 23x = -20$

$x = -\dfrac{5}{2}$ $x = -\dfrac{4}{3}$

6. The arc of a basketball which is thrown at the goal (but missed) is modeled by the equation
$f(x) = -16x + 34x + 6$. Round to two decimal places when answering the following questions:

a) Graph (accurately) the equation in the following space.

b) What is the height of the ball after 1 second?

24 feet

c) How high does the ball get?

24.0625 ft

d) How long does it take it to get that high?

1.06 seconds

e) How long was the air in the ball?

2.29 seconds