

5.7 Problems with Quadratics

Ex. 1 A quadratic is defined by $y = -5x^2 + 40x - 60$.

- a) Determine the zeros. b) Determine the max/min value and when it occurs.

- c) Use your answers from a) & b) to write the equation in factored form and vertex form.

Graph

Ex. 2 A quadratic is defined by $y = -2(x+3)(x-7)$.

- a) Determine the zeros.
- b) Determine the max/min value and when it occurs.
- c) Determine x when $y = -10$.
- d) Use your answer from b) to write the equation in vertex form.

Graph

Ex. 3 A quadratic is defined by $y = -2(x-2)^2 + 18$.

- a) Determine the zeros. b) Determine the max/min value and when it occurs.

- c) Use your answer from a) to write the equation in factored form.

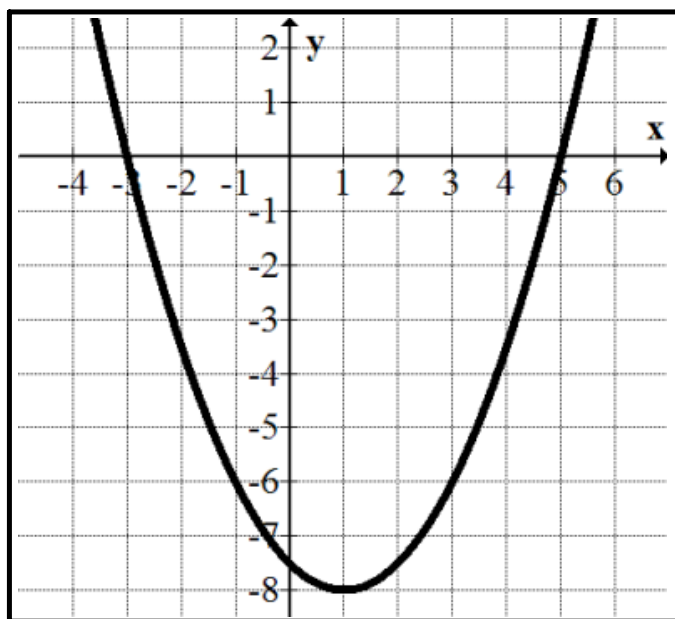
Graph

Ex. 4 Determine the equation of the quadratic shown in:

a) vertex form

b) factored form

c) standard form



Ex. 5 A professional stunt performer dives off a tower, which is 21 m high, into the water below. The performer's height, h , in meters, above the water, at t seconds after starting the jump, is given by $h = -4.9t^2 + 21$.

a) How long does it take the performer to reach the halfway point (in terms of height)?



b) How long does it take to reach the water?

c) Compare these times.

Ex. 6 The depth underwater, d , in meters, of Daisy the dolphin during a dive can be modelled by $d = 0.1t^2 - 3.5t + 6$, where t is the time in seconds after the dolphin begins her descent toward the water.

a) How long was daisy underwater?



b) How deep did Daisy Dive?