

Answers to Algebra 2 L2.2b Finding Quadratic Function Max & Min Values, Pg 62, #39-52

39. The minimum value is -1 . The domain is all real numbers and the range is $y \geq -1$. The function is decreasing to the left of $x = 0$ and increasing to the right of $x = 0$.

40. The minimum value is 7 . The domain is all real numbers and the range is $y \geq 7$. The function is decreasing to the left of $x = 0$ and increasing to the right of $x = 0$.

41. The maximum value is 2 . The domain is all real numbers and the range is $y \leq 2$. The function is increasing to the left of $x = -2$ and decreasing to the right of $x = -2$.

42. The maximum value is 8 . The domain is all real numbers and the range is $y \leq 8$. The function is increasing to the left of $x = -1$ and decreasing to the right of $x = -1$.

43. The maximum value is 15 . The domain is all real numbers and the range is $y \leq 15$. The function is increasing to the left of $x = 2$ and decreasing to the right of $x = 2$.

44. The minimum value is -32 . The domain is all real numbers and the range is $y \geq -32$. The function is decreasing to the left of $x = -3$ and increasing to the right of $x = -3$.

45. The minimum value is -18 . The domain is all real numbers and the range is $y \geq -18$. The function is decreasing to the left of $x = 3$ and increasing to the right of $x = 3$.

46. The minimum value is -4 . The domain is all real numbers and the range is $y \geq -4$. The function is decreasing to the left of $x = 2$ and increasing to the right of $x = 2$.

47. The minimum value is -7 . The domain is all real numbers and the range is $y \geq -7$. The function is decreasing to the left of $x = 6$ and increasing to the right of $x = 6$.

48. The minimum value is -2 . The domain is all real numbers and the range is $y \geq -2$. The function is decreasing to the left of $x = -2$ and increasing to the right of $x = -2$.

49. a. 1 m
b. 3.25 m
c. The diver is ascending from 0 meters to 0.5 meter and descending from 0.5 meter until hitting the water after approximately 1.1 meters.

50. a. 3090 rev/min; 74.68 ft-lbs

- b. The engine torque increases as the speed increases until the engine speed reaches 3.09 thousands of revolutions per minutes then the torque begins to decrease.

51. $A = w(20 - w) = -w^2 + 20w$; The maximum area is 100 square units.

52. $A = \frac{1}{2}b(6 - b) = -\frac{1}{2}b^2 + 3b$; The maximum area is 4.5 square units.