

Name: _____

SM2 Unit 7 Extra Practice

7.1- For 1-2, Use a graphing calculator to find all of the given information about the given quadratic equations

1) $y = x^2 + 3x - 6$

Vertex: $(-1.5, -8.25)$
Roots: $(-4.4, 0) + (1.4, 0)$
Domain: $(-\infty, \infty)$
Range: $[-8.25, \infty)$
Axis of Symmetry: $x = -1.5$
y-intercept: $(0, -6)$
Increasing: $(-1.5, \infty)$
Decreasing: $(-\infty, -1.5)$
Positive: $(-\infty, -4.4) \cup (1.4, \infty)$
Negative: $(-4.4, 1.4)$

2) $y = 2x^2 - 6x$

Vertex: $(1.5, -4.5)$
Roots: $(0, 0) + (3, 0)$
Domain: $(-\infty, \infty)$
Range: $[-4.5, \infty)$
Axis of Symmetry: $x = 1.5$
y-intercept: $(0, 0)$
Increasing: $(1.5, \infty)$
Decreasing: $(-\infty, 1.5)$
Positive: $(-\infty, 0) \cup (3, \infty)$
Negative: $(0, 3)$

7.2- For 3-5, Find the solution(s) to the system of equations, or state why there is no solution.

3) $y = x^2 + 10x - 2$
 $y = -2$

$(-10, -2)$ and $(0, -2)$

4) $y = x^2 - 3x + 5$
 $y = -3x - 2$

\emptyset No solution
they don't intersect

5) $y = \frac{3}{4}x^2 - 4x + 2$

$y = 4x - 3$

$(\bar{6}, \bar{3})$ and $(10, 37)$

7.3- Solve each application problem.

- 6) The senior class is putting on a talent show to raise money for their senior trip. In the past, the profit from the talent show could be modeled by the function $P(t) = -16t^2 + 600t - 4000$, where t represents the ticket price in dollars.

a. What is the reasonable domain for the function?

$[0, \infty)$
it doesn't make sense to charge a negative ticket price

b. For what domain value will the profits be maximized?

\$0 and \$20

- 7) The income in dollars for a school talent show is $I(p) = 100p - 5p^2$, where p is the ticket price in dollars. What ticket price(s) will result in an income of \$0?

\$0 and \$20

- 8) The fuel economy in miles per gallon of a certain vehicle is given by $f(x) = -.01x^2 + 1.2x - 5.8$, where x is the car's speed in miles per hour. For what speed(s) does the car have a fuel economy of 22 miles per gallon?

31.4 mph and 88.6 mph

- 9) The height of a baseball in feet x seconds after it is thrown is given by $h(x) = -16x^2 + 32x + 5$. When will the ball be at a height of 7 feet?

1.9 sec and .06 sec