Lesson 8.2.2

8-79. No.

a. $-5 \pm 3i$

b. $2 \pm i\sqrt{5}$

8-80. Answers might include: Both equations had two complex roots; the roots were the same except for the middle sign; some students may notice that the real part is the opposite of half the middle term of the equation in standard form.

8-81. See below:

a. 4, 5

b. 6, 34

c. –8, 17

d. 2, 4

e. $3 - 2i$

f. you get another complex number $1 - 32i$

g. $a - bi$

8-82. See below:

a. $y = x^2 - 4x + 5$

b. $y = x^2 - 6x + 34$

c. $y = x^2 + 8x + 17$

d. $y = x^2 - x + 1$

8-83. The solutions are $3 \pm 4i$, the coefficient of x is the opposite of the sum and the constant is their product.

8-84. Students should multiply $(x - (a + bi))(x - (a - bi))$.

8-85. Yes, $x + 4 = \pm i$; $(x + 4)^2 = -1$; $x^2 + 8x + 17 = 0$.

8-86. Possible equations listed below:

a. $4x^2 + 17x - 15 = 0$

b. $x^2 + 9 = 0$

c. $x^2 - 10x + 29 = 0$

d. $x^2 + 6x + 7 = 0$

8-87. Possible functions listed below.

a. $f(x) = x^2 + 6x + 10$

b. $g(x) = x^2 - 10x + 22$

c. $h(x) = x^3 + 2x^2 - 7x - 14$

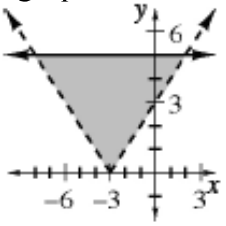
d. $p(x) = x^3 + 2x^2 - 14x - 40$

8-88. See below:

a. $b^2 - 4ac = -7$, complex

b. $b^2 - 4ac = 49$, real

8-89. See graph below. area = 25 sq. units.



8-90. See below:

a. repeat 1, i, -1, $-i$, etc

b. 1, i, $-i$, 1

c. 1

d. i, -1, $-i$

e. $1, i, -1, -i$

8-91. See below:

a. 1

b. i

c. -1

8-92. If n is a multiple of 4, the value is 1; if it is 1 more than a multiple of 4, the value is i; if it is 2 more than a multiple of 4, the value is -1; if it 3 more than a multiple of 4, the value is $-i$.

8-93. See below:

a. $x = \frac{\log 17}{\log 3}$

b. $x = \sqrt[3]{17}$

8-94. See below:

a. 2

b. 4

c. 5

d. 3

e. 1

8-95. See below:

a. Standard form for y-intercept at (0, 400) and graphing form for vertex at (0.5, 404).

b. 400 ft; 404 ft

8-96. See below:

a. $y = \log x$

b. $x = 2$

c. $y = \log_2(x - 2)$ is one possibility.