

1. The path that a rock takes as it is thrown from the roof of Hotel Blackhawk is represented by the equation  $h(t) = -16t^2 + 48t + 110$ , where  $t$  is the time in seconds and  $h$  is the height of the rock in feet.
- Explain how to find the answer in the graphing calculator if I wanted to find out how long it took for the rock to hit the ground. (be specific)
  - Explain how to find the answer in the graphing calculator if I wanted to know how high the rock got in the air before hitting the ground. (be specific)
  - Explain how to find the answer in the graphing calculator if I wanted to know how long it took the rock to get to its highest point. (be specific)
  - How tall is Hotel Blackhawk?
2. Solve.
- $\sqrt{x^2 - 2x + 1} - 7 = -3$
  - $64^{x-3} = 4096$
  - $\log_6 4x = 2$

3. Circle the expression(s) that are polynomials in one variable.

a.  $-\frac{1}{4}x - 6x^3$       b.  $2x^{-3} - 10x^4$       c.  $-7.2x^2 + 3x - 5x^8$       d.  $-8x + 9xy^2 + 10$

Match the equivalent expressions.

- |             |         |
|-------------|---------|
| 4. $i^{37}$ | A. 1    |
| 5. $i^{16}$ | B. $-1$ |
| 6. $i^{23}$ | C. $i$  |
| 7. $i^{54}$ | D. $-i$ |

8. Determine the number of real and imaginary solutions each equation would have (without a calculator).

a.  $y = -9x^2 + 5x + 4$

b.  $y = 12x^2 - 7x + 3$

c.  $y = -3x^2 - 12x - 12$

9. Simplify.

a.  $(8 - 2i) - (4 - 7i)$

b.  $(5 - i)(-3 + 6i)$

10. Write the equation given the root(s).

a.  $x = 2 - 5i$

b.  $x = 2, x = -5i$

11. Simplify.

a.  $\frac{9x^2 - 25}{3x^2 + 11x + 10}$

b.  $\frac{x^2 - 8x}{x^2 - 25} * \frac{18x - 90}{4x^2 - 32x}$