

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)  
 $y_2 = 0$   
 2nd calc Int
  - 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)  
 2nd calc max (14)
  - 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)  
 2nd calc max (x)
  - How tall is Hotel Blackhawk?  
 110 ft

2. Solve.

a.  $\sqrt{x^2 - 2x + 1} - 7 = -3$

$$x = 5$$

$$x = -3$$

b.  $64^{x-3} = 4096$

$$x = 5$$

c.  $\log_6 4x = 2$

$$x = 9$$

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.  $i^{37}$  C

A. 1

5.  $i^{16}$  A

B. -1

6.  $i^{23}$  D

C.  $i$

7.  $i^{54}$  B

D.  $-i$

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

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

2 Real

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

0 Real  
2 Imag

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

1 Real (double root)

9. Simplify.

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

$4 + 5i$

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

$-9 + 33i$

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

a.  $x = 2 - 5i$

$x^2 - 4x + 29 = 0$

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

$x^3 - 2x^2 + 25x - 50 = 0$

11. Simplify.

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

$\frac{(3x-5)}{(x+2)}$   $x \neq -2, -\frac{5}{3}$

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

$\frac{9}{2(x+5)}$

$x \neq -5, 5, 0, 8$