

## Practice Chapter 2 Test

Graph the following quadratic function. Find all intercepts and state the domain and range.

1)  $f(x) = -2x^2 - 4x + 1$

Graph the following polynomial function. Find all turning points and determine whether they are relative maximums or minimums. Find intervals of increasing and decreasing.

2)  $f(x) = -x^3 - x^2 + 12x$

Graph the following rational function. Find all asymptotes and state the domain and range.

3)  $f(x) = \frac{1}{x+2} - 3$

Find all of the zeros of each polynomial function.

4)  $f(x) = x^3 + 6x^2 - 5x - 30$

5)  $f(x) = x^4 - x^3 - 5x^2 - x - 6$

Perform the indicated operation.

6)  $(3 + 5i)(2 - 7i)$

7)  $(3 + 5i)(3 - 5i)$

8)  $(7 - 2i)^2$

9)  $\frac{4 + 5i}{3 - 2i}$

Solve for  $x$ .

10)  $2x^2 - 2x + 5 = 0$

11)  $6x^2 + 3x + 1 = 0$

Graph the rational functions. Find all asymptotes, holes, intercepts, domain and range.

$$12) f(x) = \frac{3x^2 + 5x - 2}{x^2 - 2x - 8}$$

$$13) f(x) = \frac{3x^2 - 5x - 2}{-3x^2 - 10x - 3}$$

Solve the polynomial inequalities and graph on a number line.

$$14) x^3 - x^2 \leq 6x$$