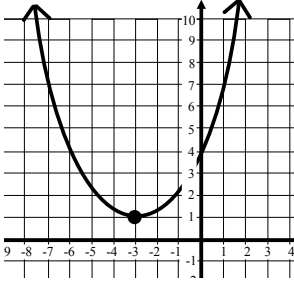


Looking Ahead: Algebra 2 Unit 5

The questions below are examples of the type of questions you'll see on your **Semester 1 Final**, **Semester 2 Final**, and the **CST**. This is how these tests will ask you to apply your skills from **Unit 5**, as well as your common sense math skills. They are structured in a way that is deliberately complicated, but the skills are the same as what you have learned up to this point.

Semester 1 Final Examples

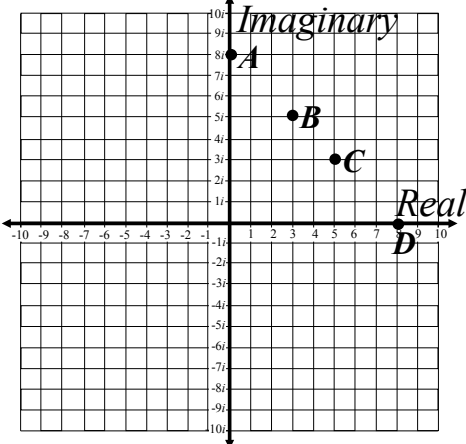
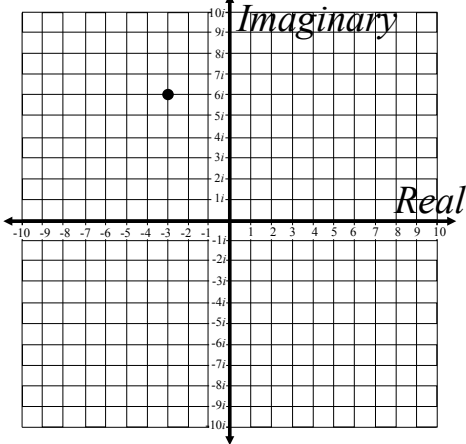
1.	Graph $f(x) = x^2 - 8x + 2$	10.	Find the complex conjugate of $3 + 4i$.
2.	Solve the equation $x^2 = -12 - 8x$	11.	Graph the complex number $-5 + 10i$
3.	The parent function $f(x) = x^2$ is reflected over the x -axis, horizontally stretched by a factor of 4, translated left two units and up 5 units to create g . Use the description to write the quadratic function in vertex form.	12.	Subtract. Write the result in the form $a + bi$. $(6 + 13i) - (9 - 11i)$
4.	Graph $y < -x^2 + 12x - 11$	13.	Multiply. Write the result in the form $a + bi$. $8i(3 - 6i)$
5.	State whether the function has a maximum or minimum value and find it. $f(x) = -x^2 + 16x - 2$	14.	Simplify $\frac{-2 + 7i}{4 - 4i}$
6.	Find the roots of the equation $3x^2 = -3x + 168$ by factoring.	15.	Write a quadratic function in standard form with zeros -5 and 4.
7.	Express $-3\sqrt{-136}$ in terms of i .	16.	Identify the axis of symmetry for the graph of $f(x) = -5x^2 + 20x - 2$
8.	Solve the equation $x^2 + 8x - 30 = 17$	17.	Use a table to translate the graph 3 units left.
9.	A toy rocket is launched from the ground level with an initial vertical velocity of 80 ft/s. The position of the rocket can be tracked using the following equation $f(t) = -16t^2 + 80t$, where t is the time in seconds. After how many seconds will the rocket hit the ground?		

Semester 2 Final Examples

18.	Factor. $5x^2 + 23x + 12$	21.	Provide a counterexample that disproves the inequality. Assume that x represents a real number. $x - 3 > \frac{12}{x}$
19.	Find the zeros. $f(x) = x^2 + 13x + 7$	22.	Graph. $y \geq -2x^2 + 5x - 2$
20.	Determine the roots of the function. $f(x) = x^2 + 10x + 14$	23.	Use the parent function $f(x) = x^2$ to describe the transformations to $g(x) = (2x + 1)^2 - 4$. Graph $g(x)$.

24.	How many solutions will the equation have? Will they be real or imaginary? $-x^2 = 2x - 20$	27.	Find the x -intercepts of the function. $f(x) = x^2 + 3x - 18$
25.	Determine the sum of two positive consecutive integers, given that one integer multiplied by a third of the other will equal 24.	28.	Solve the inequality. $9 \geq x^2 + 2x - 6$
26.	Simplify. i^{3243}	29.	Graph. $f(x) = -4x^2 + 8x + 32$

CST Examples

30.	<p>If $i = \sqrt{-1}$, which point shows the location of $3 + 5i$ on the plane?</p>  <p>A point A B point B C point C D point D</p>	33.	<p>Which of the following complex numbers is represented by the point on the graph below?</p>  <p>A $6 - 3i$ B $6 + 3i$ C $-3 + 6i$ D $-3 - 6i$</p>
31.	<p>If $i = \sqrt{-1}$, what is the value of i^6?</p> <p>A i B $-i$ C 1 D -1</p>	34.	<p>If $i = \sqrt{-1}$, then $5i(-2i) =$</p> <p>A 10 B 20 C -20 D -10</p>
32.	<p>What is an equivalent form of $\frac{2}{5+i}$?</p> <p>A $\frac{4-i}{13}$ B $\frac{4-i}{12}$ C $\frac{5-i}{13}$ D $\frac{5-i}{12}$</p>	35.	<p>If $i = \sqrt{-1}$ and a and b are non-zero real numbers, what is $\frac{3}{a+bi}$?</p> <p>A $\frac{3a+3bi}{a^2+b^2}$ B $\frac{3a-3bi}{a^2+b^2}$ C $\frac{3a+3bi}{a^2-b^2}$ D $\frac{3a-3bi}{a^2-b^2}$</p>

36.	<p>What is the product of the complex numbers $(9 + i)$ and $(9 - i)$?</p> <p>A $81 - i$ B $82 - i$ C 80 D 82</p>	42.	<p>Which expression represents $(-8 - 4i) - (-2 + 10i)$?</p> <p>A $-6 - 14i$ B $-6 + 6i$ C $-10 + 6i$ D $-10 - 14i$</p>
37.	<p>What is the sum of the complex numbers $(16 + 11i)$ and $(-4 - 7i)$?</p> <p>A $20 - 61i$ B $12 - 4i$ C $20 + 18i$ D $12 + 4i$</p>	43.	<p>What are the solutions to the equation $x^2 + 4x + 10 = 0$?</p> <p>A $x = 0; x = 10$ B $x = 0; x = 10i$ C $x = -2 + i\sqrt{6}; x = -2 - i\sqrt{6}$ D $x = -2 + \sqrt{10}; x = -2 - \sqrt{10}$</p>
38.	<p>Brenda is solving the equation $x^2 - 18x = -2$ by completing the square. What number should be added to both sides of the equation to complete the square?</p> <p>A -9 B 9 C 18 D 81</p>	44.	<p>What are the solutions to the equation $x^2 - 8x + 15 = -10$?</p> <p>A 3 and 4 B $3i$ and $4i$ C $4 + 4 \cdot 3$ and $4 - 4 \cdot 3$ D $4 + 3i$ and $4 - 3i$</p>
39.	<p>Two consecutive positive integers have the property that one integer times half the other equals 210. What is the sum of these integers?</p> <p>A 37 B 39 C 41 D 43</p>	45.	<p>Which of the following <i>most</i> accurately describes the translation of the graph $y = (x - 7)^2 + 1$ to the graph of $y = (x + 3)^2 - 4$?</p> <p>A up 3 and 4 to the left B up 5 and 10 to the right C down 5 and 10 to the left D down 5 and 3 to the right</p>
40.	<p>Which of the following sentences is true about the graphs $y = 2(x + 5)^2 + 3$ and $y = -2(x + 5)^2 + 3$?</p> <p>A Their vertices are minimums. B The graphs have the same shape and direction with different vertices. C The graphs have different shapes and directions with different vertices D One graph has a vertex that is a maximum, while the other graph has a vertex that is a minimum.</p>	46.	<p>What are the x-intercepts of the graph of $y = 30x^2 + 7x - 2$?</p> <p>A $-\frac{1}{6}$ and $\frac{2}{5}$ B $\frac{1}{6}$ and $-\frac{2}{5}$ C 1 and $-\frac{1}{3}$ D -1 and $\frac{1}{3}$</p>
41.	<p>Which ordered pair is the vertex of $f(x) = x^2 + 4x + 3$?</p> <p>A $(0, 3)$ B $(-1, 0)$ C $(-2, -1)$ D $(1, 8)$</p>		

47. Which is the graph of $f(x) = 3(x - 4)^2 + 2$?

