

\*AAT

Chapter 5: Tasks #1-7 (IC)

Name: Key  
Date: \_\_\_\_\_ Period: \_\_\_\_\_

Task #1:

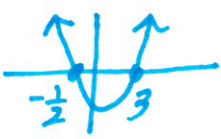
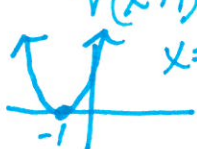

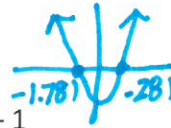
Quincy has been confused about simplifying algebraic expressions. His brother Eli prepared this quiz for him to practice. Look at Quincy's responses. If the response is correct, write correct. If it is incorrect, write the correct answer.

- $(\frac{3x^2}{y})^{-2}$   $(\frac{y}{3x^2})^2 = \frac{y^2}{9x^4}$   $\frac{y^2}{9x^4}$  C
- $\frac{12a^3b^{-4}}{4a^{-2}b}$   $\frac{3a^3a^2}{b^4b^1} = \frac{3a^5}{b^5}$   $\frac{3b^5}{a^5}$  I
- $(-3ab^4)(4ab^{-3})$   $= -12a^2b$   $12a^2b$  I
- $3a(-4a^2)^0$   $3a(1) = 3a$   $1$  I
- $2a - (a - b)$   $2a - a + b = a + b$   $a - b$  I
- $\frac{n+5}{n}$   $\frac{n+5}{n}$   $5$  I
- $(7x^4 - x^2 - 4x + 2) - (3x^4 - 4x^2 + 3x)$   $4x^4 + 3x^2 - 7x + 2$   $4x^4 + 3x^2 - 7x + 2$  C
- $\frac{x^3 - 4x}{x^2 + x - 2}$   $\frac{x(x^2 - 4)}{(x+2)(x-1)} = \frac{x(x-2)(x+2)}{(x+2)(x-1)} = \frac{x(x-2)}{(x-1)}$   $\frac{x(x-1)}{(x-2)}$  I
- $\sqrt[3]{-40x^6}$   $\sqrt[3]{-8 \cdot 5 \cdot x^6} = -2x^2\sqrt[3]{5}$   $-2x^2\sqrt[3]{5}$  C
- $\sqrt{75x^3}$   $\sqrt{25 \cdot 3 \cdot x^2 \cdot x} = 5\sqrt{x}\sqrt{3x}$   $5x\sqrt{3x}$  I

Task #2: Elizabeth was going to complete her algebra assignment using her graphing calculator. Her older sister Carolyn decided to change the equations that she had copied into her notebook to tease her. Help Elizabeth by making each equation below quicker and easier to type into her calculator.

- $y = 2x^{-1}$   $y = \frac{2}{x}$
- $y = (2x)^{-1}$   $y = \frac{1}{2x}$
- $y = \frac{7.2x^7}{3.6x^4}$   $y = 2x^3$
- $y = (-4)^0$   $y = 1$
- $y = x^{-4.2}x^{6.2}$   $y = x^2$
- $y = 3^{-3} \cdot 3^2$   $y = 3^5 = 243$
- $y = \frac{1}{5^{-4}}$   $y = 5^4 = 625$

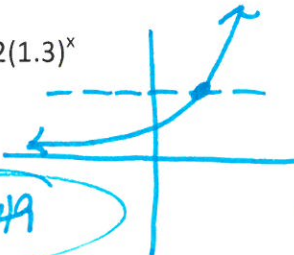
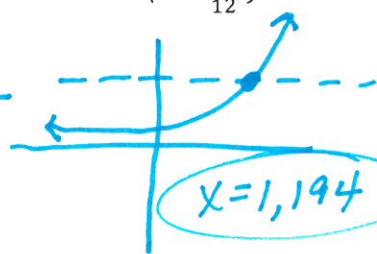
**Task #3:** Find any roots or zeros of each quadratic function below by factoring, quadratic formula or completing the square. Then graph them to verify.

<p>1. <math>f(x) = 2x^2 - 5x - 3</math> <i>factor</i></p> <p><math>x = -\frac{1}{2}, x = 3</math></p> <p><math>(2x+1)(x-3) = 0</math></p> 	<p>2. <math>f(x) = x^2 + 2x + 1</math> <i>factor</i></p> <p><math>x = -1</math> d.r.</p> <p><math>\sqrt{(x+1)^2} = 0</math></p> <p><math>x = -1</math> d.r.</p> 	<p>3. <math>f(x) = x^2 + 2x + 3</math> <i>comp. sq.</i></p> <p><math>-3 = x^2 + 2x + 1</math></p> <p><math>+1</math></p> <p><math>\sqrt{-2} = \sqrt{(x+1)^2}</math></p> <p><math>\pm i\sqrt{2} = (x+1)</math></p> <p><math>x = -1 \pm i\sqrt{2}</math></p> 	<p>4. <math>f(x) = 2x^2 + 3x - 1</math> <i>quad.</i></p> <p><math>x = \frac{-3 \pm \sqrt{9 - 4(2)(-1)}}{2(2)}</math></p> <p><math>= \frac{-3 \pm \sqrt{17}}{4}</math></p> <p><math>\approx -2.81</math> or <math>-1.781</math></p> 
---	---	--	--

**Task #4:** Sometimes it is helpful to express an algebraic function in a form that is simpler than the way that it appears. If possible, express each fraction below in a simpler form. If the fraction cannot be expressed in a simpler form, write *not possible*.

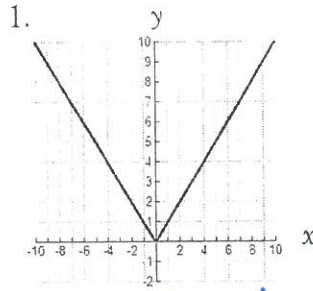
<p>1. <math>\frac{x^2-4}{x-2}</math></p> <p><math>\frac{(x-2)(x+2)}{(x-2)}</math></p> <p><math>x+2</math></p>	<p>2. <math>\frac{n^2+1}{n+1}</math></p> <p>not possible</p>	<p>3. <math>\frac{b^2+b}{b+1}</math></p> <p><math>\frac{b(b+1)}{(b+1)}</math></p> <p><math>= b</math></p>	<p>4. <math>\frac{x^2+7x+10}{x+2}</math></p> <p><math>\frac{(x+5)(x+2)}{(x+2)}</math></p> <p><math>x+5</math></p>	<p>5. <math>\frac{n^2-8n+16}{n-4}</math></p> <p><math>\frac{(n-4)(n-4)}{(n-4)}</math></p> <p><math>= n-4</math></p>
---	--	---	---	---

**Task #5:** Use graphical reasoning and the properties of exponents and logarithms to simplify the expression or solve the equation for  $x$ .

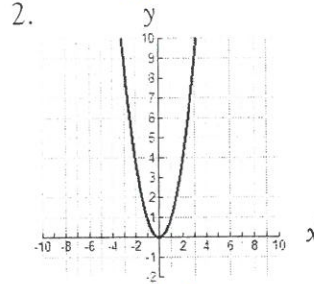
<p>1. <math>5 = 2(1.3)^x</math></p>  <p><math>x = 3.49</math></p>	<p>2. <math>60 = 5(1 + \frac{.025}{12})^x</math></p>  <p><math>x = 1,194</math></p>	<p>3. <math>4\log 8 + 3\log 5 - 3\log 2 =</math></p> <p><math>\log \frac{2^{3(4)}}{2^3} = \log \frac{2^{12}}{2^3} = \log 2^9</math></p> <p><math>9\log 2 + 3\log 5</math></p>
<p>4. <math>\log x^3 + \log x^2 + 3\log x =</math></p> <p><math>\log(x^3 \cdot x^2 \cdot x^3)</math></p> <p><math>= \log(x^8)</math></p> <p><math>= 8\log x</math></p>	<p>5. <math>2^{2x+2} = 8^{x+2}</math></p> <p><math>2^{2x+2} = 2^3(x+2)</math></p> <p><math>2x+2 = 3x+6</math></p> <p><math>-4 = x</math></p>	

Task #6: Serena is trying to remember some of the graphs for elementary functions. Help her identify the names of the graphs below.

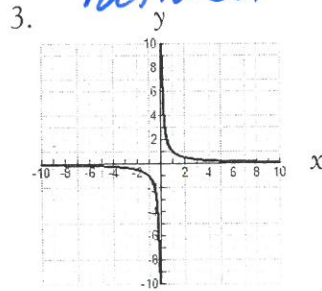
absolute value



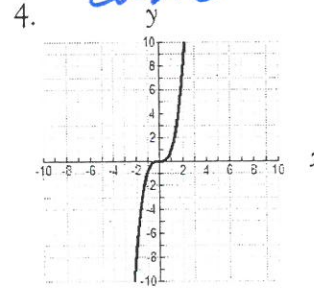
quadratic



rational



cubic



Task #7: Write a description of how you would explain to a friend that  $x^2 + 9 = 0$  has no real roots.

$$x^2 = -9$$
$$x = \pm 3i$$

