

# Finding Inverse WS 1

WS #2: Advanced Algebra

Name: \_\_\_\_\_ Hr: \_\_\_\_\_

Find the inverse of the following functions:

<p>1. <math>y = \sqrt[3]{x+1}</math>  <math>x = \sqrt[3]{y} + 1</math>  <math>\phantom{x} - 1</math>  <math>(x-1)^3 = (\sqrt[3]{y})^3</math>  <math>\boxed{y = (x-1)^3}</math></p>	<p>2. <math>y = 32x^5</math>  <math>x = \frac{32y^5}{32}</math>  <math>\sqrt[5]{\frac{x}{32}} = \sqrt[5]{y^5} \Rightarrow \boxed{y = \frac{\sqrt[5]{x}}{2}}</math></p>
<p>3. <math>y = 32x^4</math>  <math>\frac{x}{32} = \frac{32y^4}{32}</math>  <math>\sqrt[4]{\frac{x}{32}} = \sqrt[4]{y^4} \Rightarrow y = \frac{\sqrt[4]{x}}{2} \cdot \sqrt[4]{2^3}</math>  <math>y = \boxed{\pm \frac{\sqrt[4]{8x}}{2}}</math></p>	<p>4. <math>y = \frac{1}{5}x - \frac{3}{7}</math>  <math>x = \frac{1}{5}y - \frac{3}{7}</math>  <math>5(x + \frac{3}{7}) = \frac{y}{5} \cdot 5</math>  <math>\boxed{y = 5x + \frac{15}{7}}</math></p>
<p>5. <math>y = 8x^3 - 54</math>  <math>x = 8y^3 - 54</math>  <math>x + 54 = 8y^3</math>  <math>\sqrt[3]{\frac{x+54}{8}} = \sqrt[3]{8y^3} \Rightarrow \boxed{y = \frac{\sqrt[3]{x+54}}{2}}</math></p>	<p>6. <math>y = (x-7)^2 - 8</math>  <math>x = (y-7)^2 - 8</math>  <math>\sqrt{x+8} = \sqrt{(y-7)^2}</math>  <math>y-7 = \pm \sqrt{x+8}</math>  <math>\boxed{y = 7 \pm \sqrt{x+8}}</math></p>
<p>7. <math>y = (6x)^3 + 1</math>  <math>x = (6y)^3 + 1</math>  <math>\sqrt[3]{x-1} = \sqrt[3]{(6y)^3}</math>  <math>6y = \sqrt[3]{x-1}</math>  <math>\boxed{y = \frac{\sqrt[3]{x-1}}{6}}</math></p>	<p>8. <math>y = 16(x+1)^4</math>  <math>x = 16(y+1)^4</math>  <math>\frac{x}{16} = \frac{16(y+1)^4}{16}</math>  <math>\sqrt[4]{\frac{x}{16}} = \sqrt[4]{(y+1)^4}</math>  <math>y = -1 \pm \frac{\sqrt[4]{x}}{2}</math></p>
<p>9. <math>y = \frac{x-6}{5}</math>  <math>5 \cdot x = \frac{y-6}{5} \cdot 5</math>  <math>5x = y-6</math>  <math>\boxed{y = 5x+6}</math></p>	<p>10. <math>y = -2x + \frac{1}{4}</math>  <math>x = -2y + \frac{1}{4}</math>  <math>(-\frac{1}{2})(x - \frac{1}{4}) = -2y(-\frac{1}{2})</math>  <math>\boxed{-\frac{x}{2} + \frac{1}{8} = y}</math></p>

11. Find the inverse of the following: (2, 3) (5, 8) (10, 2).

$$\boxed{(3, 2) (8, 5) (2, 10)}$$