

Answer Key

Informal Check-In – Section 2 in Entirety

If you can laugh at how easy these questions are, you are ready for tomorrow.

Simplify using the radical exponent relationship

<p>1. $\sqrt{25x^6}$</p> $(5^2 x^6)^{1/2}$ $5^{2/2} x^{6/2}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $5x^3$ </div>	<p>2. $\sqrt[3]{64z^9}$</p> $(4^3(z^3)^3)^{1/3}$ $4^{3/3}(z^3)^{3/3}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $4z^3$ </div>
--	---

Simplify the following using root principles

<p>3. $\sqrt{32x^5y^7}$</p> $\sqrt{16 \cdot 2 \cdot (x^2)^2 \cdot x \cdot (y^3)^2 \cdot y}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $4x^2y^3\sqrt{2xy}$ </div>	<p>4. $\sqrt[3]{-40x^5y^7}$</p> $-\sqrt[3]{8 \cdot 5 \cdot x^3 \cdot x^2 \cdot (y^2)^3 \cdot y}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $-2xy^2\sqrt[3]{5x^2y}$ </div>
--	---

Perform the following operations

<p>5. $\sqrt{125x^2} - 2x\sqrt{45} + 3x\sqrt{5}$</p> $\sqrt{25 \cdot 5 \cdot x^2} - 2x\sqrt{9 \cdot 5} + 3x\sqrt{5}$ $5x\sqrt{5} - 2x \cdot 3\sqrt{5} + 3x\sqrt{5}$ $8x\sqrt{5} - 6x\sqrt{5}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $2x\sqrt{5}$ </div>	<p>6. $-\sqrt[3]{16y^5} + 2y^3\sqrt[3]{2y^2} - \sqrt[3]{-54y^5}$</p> $-\sqrt[3]{8 \cdot 2 \cdot y^3 \cdot y^2} + 2y^3\sqrt[3]{2y^2} + \sqrt[3]{27 \cdot 2 \cdot y^3 \cdot y^2}$ $-2y^3\sqrt[3]{2y^2} + 2y^3\sqrt[3]{2y^2} + 3y^3\sqrt[3]{2y^2}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> $3y^3\sqrt[3]{2y^2}$ </div>
---	---

<p>7. $(\sqrt[3]{x^2y^2})(\sqrt{x^5y})$ get common denominator $\frac{2}{6}$ and $\frac{3}{6}$</p> <p>$(x^2y^2)^{2/6} (x^5y)^{3/6}$</p> <p>$x^{4/6} y^{4/6} x^{15/6} y^{3/6}$</p> <p>$x^{19/6} y^{7/6}$</p> <p>$\sqrt[6]{(x^3)^6 \cdot x \cdot y^6 \cdot y}$</p> <p>$x^3 y \sqrt{xy}$</p>	<p>8. Rationalize the Denominator</p> $\frac{3}{2-\sqrt{3}}$ $\frac{3}{2-\sqrt{3}} \cdot \frac{2+\sqrt{3}}{2+\sqrt{3}} = \frac{6+3\sqrt{3}}{4-3}$ $\frac{6+3\sqrt{3}}{1} = \boxed{6+3\sqrt{3}}$ <p>$(2-\sqrt{3})(2+\sqrt{3})$ $4+2\sqrt{3}-2\sqrt{3}-3$</p>
<p>Solve the radical, identify the Domain Restrictions and Check Solutions for Viability</p>	
<p>9. $\sqrt{4t-7} = 3$ $4t-7 \geq 0 \Rightarrow t \geq \frac{7}{4}$</p> $\sqrt{4t-7}^2 = 3^2$ $4t-7 = 9$ $4t = 16$ $t = 4$ <p>Check $4 \geq \frac{7}{4} \checkmark$</p> $\sqrt{4(4)-7} = 3$ $\sqrt{16-7} = 3$ $\sqrt{9} = 3$ $3 = 3 \checkmark$ <p>$t = 4$</p>	<p>10. $\sqrt{x-5} + 4 = \sqrt{x-1}$ $x \geq 5$</p> $x-5 \geq 0 \rightarrow x \geq 5 \quad x \geq 0$ $(\sqrt{x-5})^2 = (\sqrt{x-1}-4)^2$ $x-5 = (\sqrt{x-1}-4)(\sqrt{x-1}-4)$ $x-5 = x-5\sqrt{x-1}-5\sqrt{x-1}+25$ $x-5 = x-10\sqrt{x-1}+25$ $-30 = -10\sqrt{x-1}$ $3 = \sqrt{x-1}$ $9 = x-1$ <p>Check $\sqrt{9-5} + 4 = \sqrt{9-1}$</p> $\sqrt{4} + 4 = 3-1$ $2+4 = 2$ <p>$6=2$ $\boxed{\text{No Solution}}$</p>