11.2 Operations with Radical Expressions
Simplify each expression.

\[6\sqrt{5} - 2\sqrt{5} + 8\sqrt{5}\]

\[4\sqrt{3} + 2\sqrt{12}\]

\[\sqrt{27} + \sqrt{48} + \sqrt{12}\]

\[5\sqrt{8} + 2\sqrt{20} - \sqrt{8}\]
11.2 Operations with Radical Expressions
Simplify each expression.

\[ \sqrt{2}(\sqrt{8} + \sqrt{6}) \]

\[ \sqrt{6}(3\sqrt{2} - 2\sqrt{3}) \]

11.2 Operations with Radical Expressions
Simplify each expression.

\[ (4 + \sqrt{3})(4 - \sqrt{3}) \]

\[ (\sqrt{8} + \sqrt{2})(\sqrt{5} + \sqrt{3}) \]
11.3 Solving Radical Equations
Solve each equation. Check your solution.

\[ \sqrt{k} + 2 - 3 = 7 \]

\[ \sqrt{\frac{3s}{5}} - 4 = 2 \]

11.3 Solving Radical Equations
Solve each equation. Check your solution.

\[ \sqrt{17 - k} = k - 5 \]

\[ \sqrt{4s + 17 - s - 3} = 0 \]
11.3 Solving Radical Equations
Solve each equation. Check your solution.

\[ \sqrt{2x^2 - 9} = x \]

\[ \sqrt{24 + 8q} = q + 3 \]

11.3 Solving Radical Equations
Solve each equation. Check your solution.

\[ y = \sqrt{y + 6} \]

\[ \sqrt{2x + 15} + 5 = 18 \]
Algebra Quiz 11.2 to 11.3 Review

11.2 Operations with Radical Expressions
Simplify each expression.

\[ 6\sqrt{5} - 2\sqrt{5} + 8\sqrt{5} \]

\[ 4\sqrt{3} + 2\sqrt{12} \]

\[ 4\sqrt{3} + 2\sqrt{4\sqrt{3}} \]
\[ 4\sqrt{3} + 2 \cdot 2\sqrt{3} \]
\[ 4\sqrt{3} + 4\sqrt{3} \]

\[ \frac{6-2+8}{12} = \frac{12}{12} = 1 \]

\[ \sqrt{27} + \sqrt{48} + \sqrt{12} \]
\[ \sqrt{9\sqrt{3}} + \sqrt{16\sqrt{3}} + \sqrt{4\sqrt{3}} \]
\[ 3\sqrt{3} + 4\sqrt{3} + 2\sqrt{3} \]

\[ 5\sqrt{8} + 2\sqrt{20} - \sqrt{8} \]
\[ 5\sqrt{4\sqrt{2}} + 2\sqrt{4\sqrt{5}} - \sqrt{4\sqrt{2}} \]
\[ 5 \cdot 2\sqrt{2} + 2 \cdot 2\sqrt{5} - 2\sqrt{2} \]
\[ 10\sqrt{2} + 4\sqrt{5} - 2\sqrt{2} \]
\[ 8\sqrt{2} + 4\sqrt{5} \]
11.2 Operations with Radical Expressions
Simplify each expression.

\[ \sqrt{2}(\sqrt{8} + \sqrt{6}) \]

\[ (\sqrt{2})(\sqrt{8}) + (\sqrt{2})(\sqrt{6}) \]

\[ \sqrt{16} + \sqrt{8} \]

\[ 4 + \sqrt{4}\sqrt{2} \]

\[ 4 + 2\sqrt{2} \]

\[ \sqrt{6}(3\sqrt{2} - 2\sqrt{3}) \]

\[ (\sqrt{6})(3\sqrt{2}) - (\sqrt{6})(2\sqrt{3}) \]

\[ 3\sqrt{12} - 2\sqrt{18} \]

\[ 3\sqrt{4}\sqrt{3} - 2\sqrt{9}\sqrt{2} \]

\[ 3\cdot2\sqrt{3} - 2\cdot3\sqrt{2} \]

\[ 6\sqrt{3} - 6\sqrt{2} \]

\[ (4 + \sqrt{3})(4 - \sqrt{3}) \]

\[ \text{FOIL} \]

\[ 4\cdot4 + 4(-\sqrt{3}) + 4\sqrt{3} - (\sqrt{3})\sqrt{3} \]

\[ 16 - 4\sqrt{3} + 4\sqrt{3} - 3 \]

\[ 16 - 3 \]

\[ 13 \]

\[ (\sqrt{8} + \sqrt{2})(\sqrt{5} + \sqrt{3}) \]

\[ \text{FOIL} \]

\[ (\sqrt{8})(\sqrt{5}) + (\sqrt{8})(\sqrt{3}) + (\sqrt{2})(\sqrt{5}) + (\sqrt{2})(\sqrt{3}) \]

\[ \sqrt{40} + \sqrt{24} + \sqrt{10} + \sqrt{6} \]

\[ 2\sqrt{10} + 2\sqrt{6} + \sqrt{10} + \sqrt{6} \]

\[ 3\sqrt{10} + 3\sqrt{6} \]
11.3 Solving Radical Equations
Solve each equation. Check your solution.

\[ \sqrt{k + 2} - 3 = 7 \]
\[ +3 +3 \]
\[ \sqrt{k + 2} = 10 \]
\[ (\sqrt{k + 2})^2 = 10^2 \]
\[ k + 2 = 100 \]
\[ -2 -2 \]
\[ k = 98 \]

\[ \sqrt{\frac{3s}{5}} - 4 = 2 \]
\[ +4 +4 \]
\[ \sqrt{\frac{3s}{5}} = 6 \]
\[ \left(\sqrt{\frac{3s}{5}}\right)^2 = 6^2 \]
\[ \frac{3s}{5} = 36 \]
\[ \frac{3s}{5} = 180 \]
\[ \frac{3s}{3} = 60 \]
\[ s = 60 \]

11.3 Solving Radical Equations
Solve each equation. Check your solution.

\[ \sqrt{17 - k} = k - 5 \]
\[ (\sqrt{17 - k})^2 = (k - 5)^2 \]
\[ 17 - k = k^2 - 10k + 25 \]
\[ +k +k \]
\[ 17 = k^2 - 9k + 25 \]
\[ -17 -17 \]
\[ 0 = k^2 - 9k + 8 \]
\[ 0 = (k - 1)(k - 8) \]
\[ k = 1, 8 \]
\[ k = 8 \]
11.3 Solving Radical Equations
Solve each equation. Check your solution.

\[
\sqrt{2x^2 - 9} = x
\]

\[
\left(\sqrt{2x^2 - 9}\right)^2 = x^2
\]

\[
2x^2 - 9 = x^2
\]

\[
-x^2
\]

\[
x^2 - 9 = 0
\]

\[
(x + 3)(x - 3) = 0
\]

\[
x = \pm 3, 3^3
\]

doesn't work

\[
x = \pm 3^3
\]

11.3 Solving Radical Equations
Solve each equation. Check your solution.

\[
\sqrt{24 + 8q} = q + 3
\]

\[
\left(\sqrt{24 + 8q}\right)^2 = (q + 3)^2
\]

\[
24 + 8q = q^2 + 6q + 9
\]

\[
-24 - 8q
\]

\[
0 = q^2 - 2q - 15
\]

\[
0 = (q - 5)(q + 3)
\]

\[
q = \pm 5, -3^3
\]

doesn't work

\[
q = \pm 5^3
\]

11.3 Solving Radical Equations
Solve each equation. Check your solution.

\[
y = \sqrt{y + 6}
\]

\[
(y)^2 = (\sqrt{y + 6})^2
\]

\[
y^2 = y + 6
\]

\[
y^2 - y - 6 = 0
\]

\[
(y - 3)(y + 2) = 0
\]

\[
y = \pm 3, -2^3
\]

doesn't work

\[
y = \pm 3^3
\]

11.3 Solving Radical Equations
Solve each equation. Check your solution.

\[
\sqrt{2x + 15} + 5 = 18
\]

\[
\sqrt{2x + 15} = 13
\]

\[
(\sqrt{2x + 15})^2 = (13)^2
\]

\[
2x + 15 = 169
\]

\[
-15
\]

\[
2x = 154 - 15
\]

\[
\frac{2x}{2} = \frac{149}{2}
\]

\[
x = 77
\]